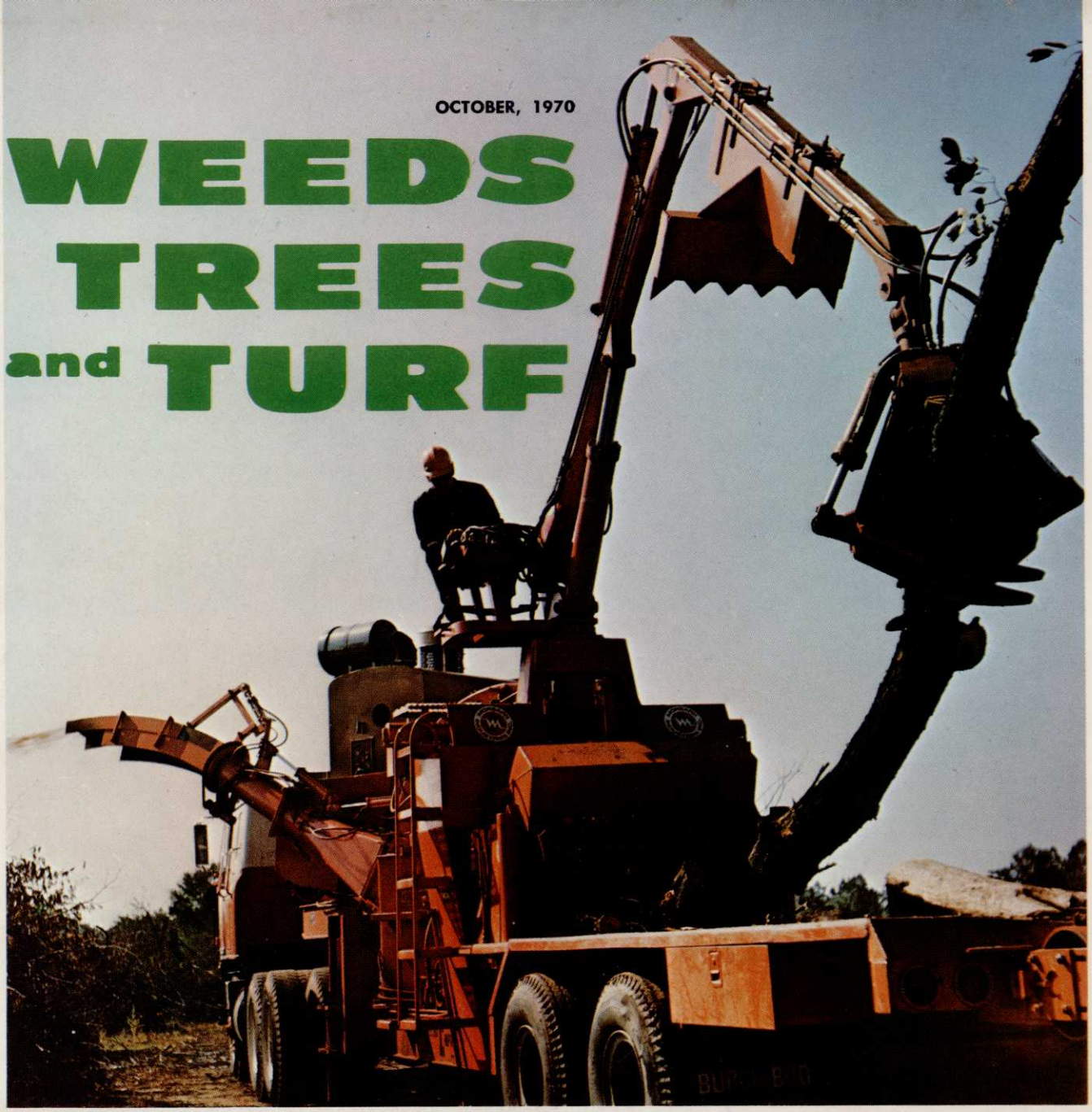
OCTOBER, 1970

WEEDS TREES and TURF



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Princep by Geigy

For More Details Circle (113) on Reply Card

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Big Tree Chippers 8

Whole trees up to 20 inches in diameter or trunk sections up to four feet in diameter disappear into chips in a matter of seconds. Cities can solve disposal problems and sell the chips.

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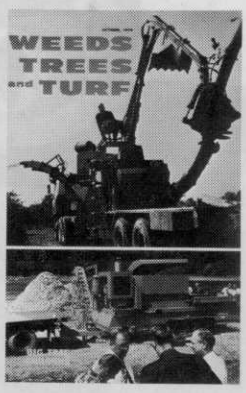
The Cover

Cities and parks—also commercial contractors, for that matter—who have had tree disposal problems should welcome the introduction of the two machines featured on the cover. These machines are truly industry firsts, designed specifically to ease the tree-removal burden of metropolitan areas imposed primarily by Dutch Elm disease. At the top is the Chiparvestor, manufactured by Morbark Industries of Winn, Mich. The other one is the Vermeer 604 Log Chipper, made by Vermeer Manufacturing Co. of Pella, Ia. A report about these machines, including what they can do, how they are being used, and how the end product—the chips—is being marketed, begins on page 8.



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THE system of weed and disease control.

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To Maintain a Balance With Ecologists in Nature

"Modern farming is a parasite on ancient plant production . . . a system that cannot endure forever as it presently exists."

"The paddy rice system is one of the world's most elegant ecological systems."

"Americans are burning things at such a rate that the U.S. depends on an importation of oxygen."

"What about eating grasshoppers? They're two to three times as good at protein production on a pasture field as a beef cow is."

"Demanding that every apple be blemish-free . . . will ultimately cause—not Eden—but hell on earth."

ECOLOGISTS speaking.

These statements are overly alarming because we've taken them out of context. We've done so to jar your attention to a series of articles that is available as a reprint.

If you are a pesticide applicator, we strongly suggest you shell out a dollar for the whole story. We practically guarantee you will re-evaluate your opinion of ecologists, and re-evaluate the future of your business.

When ecology moved into the living room, took its seat between motherhood and the flag, and began blasting everything previously judged "beautiful progress," Michigan Farmer magazine undertook to inform its readers about ecologists.

Staff writer Richard Lehnert interviewed three ecologists at Michigan State University, John E. Cantlon, Manfred Engelmann and William E. Cooper. He asked them to tell their story on their own terms to acquaint farmers with their ideas. Five articles are packaged as a 12-page reprint entitled "Ecologists Look at Our Environment." If you're interested, send a dollar—unit price for 1-10 copies (75¢ for 11-19, further discounts available) to Michigan Farmer, 4415 North Grand River Ave., Lansing, Mich. 48906.

You should be interested. We agree with John Cantlon, who says "Ten years from now, environmental quality will be a major restraint on what people do."

At the least, you will be affected to the extent of the methods, equipment and products used; at the most, you could be put out of business.

The sudden concern for our atmosphere brought a turn in thinking, say the ecologists.

"A major shift in psychology made its appearance," said William Cooper. "Rather than the burden of proof falling on us—to prove something was harmful—the burden of proof was shifted to industry. Now if industries want to do something, it's up to them to prove it doesn't do damage—rather than us proving it does."

There is still a more compelling reason for you to become better acquainted with ecologists. It is human nature to be irresponsible occasionally. Some people, however, are in a position to be irresponsible on a grandiose scale. Example:

The Environmental Defense Fund has petitioned the government to establish a zero tolerance for DDT in raw agricultural commodities. If we're to accept the alleged universal presence of DDT, it means, says Dr. W. G. Eden of the University of Florida, that "such a law could reduce the production and sale of many agricultural commodities in Florida and elsewhere by as much as 50%."

This irresponsible petition from persons close to the seat of government comes in the face of not one shred of evidence that DDT residues are harmful to mankind. The petitioners, it is shuddering obvious, could not have given much, if any, thought to the full consequences of their demand.

We believe the Michigan State trio to be responsible ecologists, as evidenced by Cantlon's position on pesticides.

"We always will have, and should have, pesticides, judiciously chosen, to keep pests down," he said. "But we do not live in a sealed world, in which everything can be neat and clean. We cannot kill every weed, every insect that threatens, nor should we want to."

Cantlon's position has special significance for he is president of the Ecological Society of America, a group with some 4,000 members.

Applicators of chemical pesticides have no comparable organization!

It is imperative that a counter-force be mustered to check any ecological irresponsibility to assure that the "Balance of Nature" remains favorable to man.

* * * * *

Early morning, recently, I flew into Chicago to find it as crisp and clear as the Colorado mountains in the wintertime. A violent storm the night before had swept away the polluted air leaving this magnificent symbol of man's progress glistening in unblemished sunlight.

It was an indelible spectacle. Mankind should demand that his air—and water—be that pure every morning.

We hope the push for a "pollution-free" environment is relentless. But we must guard against a leadership that would prescribe a route requiring us to replace a New York strip sirloin with a handful of grasshoppers.

Gene Ingalsbe

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BIG

ONE MACHINE will chew an entire 50-ft tree into chips in less than 15 seconds. The other one will chip a six-foot section of a tree up to four feet in diameter.

Together, these machines may represent the solution to the massive tree disposal problems of major cities. The bonus benefit is that the end product—the chips—are marketable.

Chips are being sold, depending on quality, for use in making paper, building materials, livestock bedding, temporary ground cover for areas such as fairgrounds, pathways, and parking lots, erosion control on slopes, and for a variety of mulches. They're also being used to charge municipal incinerators to hasten the combustion of heavy-moisture garbage.

The two machines were designed to combat a compounding problem that has come about in the past few years. As Dutch elm disease was killing tens of thousands of trees in cities and multiplying removal and disposal costs, air pollution became a public issue. Many cities have banned open burning. The result has been a rapidly building mountain of logs and brush. The only disposal—for cities that could not burn—has been for landfill. But as these sites disappeared and as distance to new dumping locations increased, hauling and dumping costs soared, both in terms of labor and utilization of trucks.

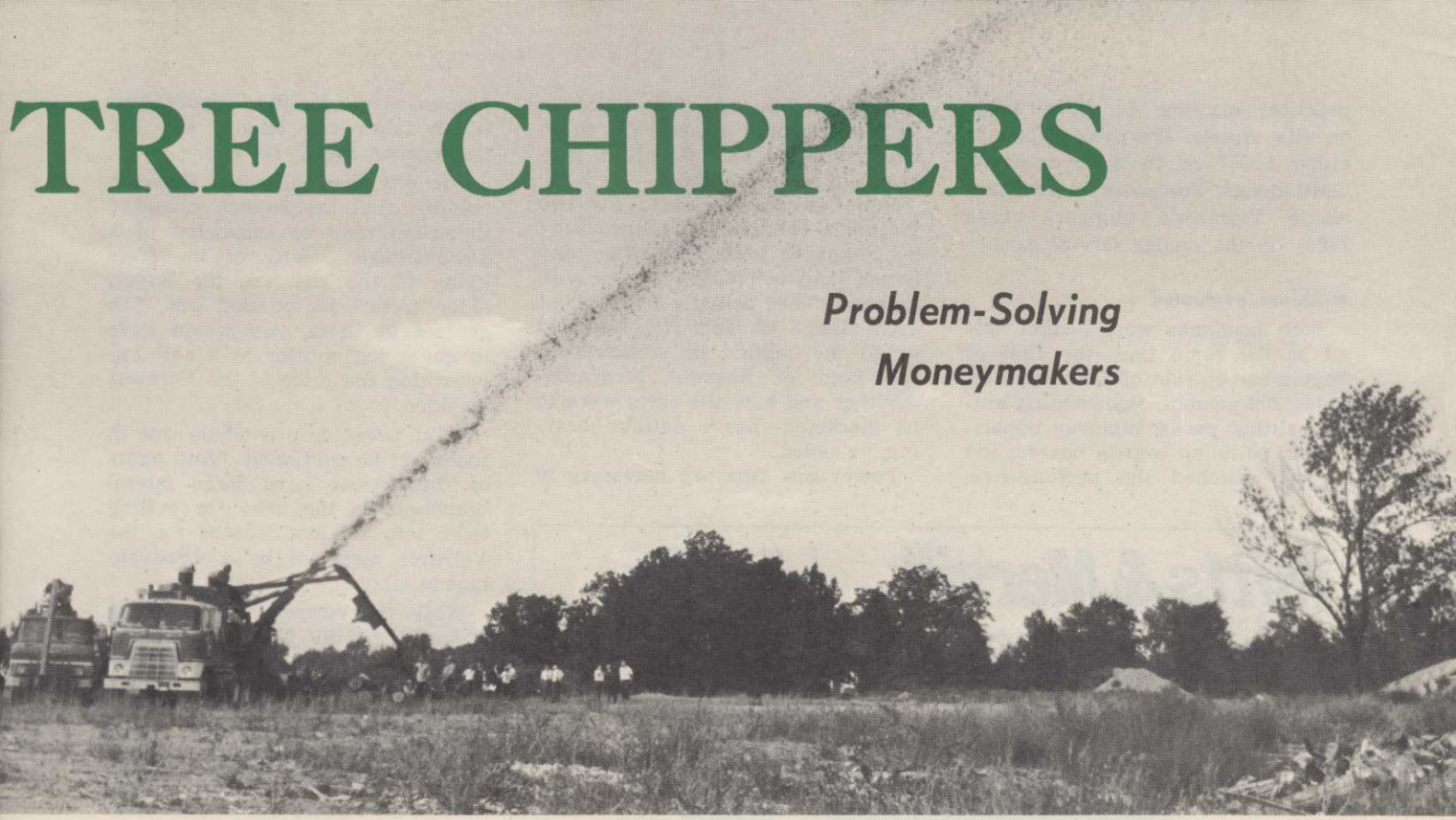
The new machines are the Metro Chiparvestor, manufactured by Morbark Industries, Inc., Winn, Mich., and the Vermeer 604 Log Chipper, made by Vermeer Manufacturing Co., Pella, Ia. Morbark is a large-scale equipment manufacturer serving the lumber and papermaking industries. Vermeer is a leading manufacturer of a wide range of equipment for the nursery and tree-care industries.

While he still believes that burning is the most efficient and total dis-

Bud Taylor and Jerry Kloostra of Vermeer's Jackson, Mich., sales office answered questions at a demonstration of the 604 in the Detroit area. The machine below was a popular attraction at the International Shade Tree Conference Field Day in Rochester, N.Y.

TREE CHIPPERS

Problem-Solving Moneymakers



posal method, Jim Garvey, district tree foreman for the Chicago forestry division, called the Chiparvestor "a tremendous step in the right direction."

According to unit price tag, the machines are expensive. The Vermeer 604 Log Chipper is tagged around $20,000; models of the Morbark Chiparvestor exceed $85,000.

"But just from an operating expense viewpoint, savings in time and labor justify the cost of the Chiparvestor," say Morbark officials. And Bob Peterson, co-owner of Peterson Wood Chip Producers, Lansing, Mich., exclaimed in scooping up a handful of chips at the site of Vermeer machine recently, "that's a pile of gold."

Bob Peterson, co-owner of Peterson Wood Chip Producers, Lansing, Mich., bought the first model of both machines. What's he holding? "A handful of gold," he says.

Chipper Descriptions

Here's a brief profile of the two chippers:

METRO CHIPARVESTOR — It's 42′ long, 8′ wide and 12½′ high. A 6110 mill chain on a 20′10″ conveyor moves entire trees (placed on it by a Prentice loader) into a three-knife, 75″ chipper operating at 500 rpm. Power is a 310 hp diesel with a 100-gal fuel tank.

Operating speed is hardly believable unless you see it in action. The maximum speed at which the machine turns trees into chips—for the biggest model—would produce 250 tons in a working day.

Describing the maximum capacity another way, Leo Bronson, assistant manager of the Chiparvestor division, talked about "filling a 20-ton van in 20 minutes." A more realistic figure," he said, including down time," would be 1,000 lbs. a minute."

Trees up to 20″ in diameter can be handled by the Chiparvestor, provided there are no large lateral limbs. For more details about the Morbark chipper, circle (719) on the reader service card.

Some 200 persons watched both the Morbark Chiparvestor (above) and the Vermeer 604 log chipper (below) perform in the Detroit area in September.
Leo Bronson, left, assistant manager of the Chiparvestor division, chats with Samuel Nimlin, Jr., Wayne County air pollution control official.

VERMEER 604 LOG CHIPPER—The name implies what it is best suited for, although it will chip all parts of a tree. A coffin-like box, filled with a loader, will handle practically any size tree—unless you happen to find one with a diameter in excess of six feet. The receiving box, however, is designed to take tree sections 6′ long and up to 4′ in diameter. The box travels over a high-speed rotary cylinder with 45 carbide-tipped cutting teeth planing away chips at a maximum rate of about 40 tons per day.

Vermeer's machine is 22′5″ long, 7′5″ wide and 9′8″ high. It can be towed from site to site and is a

practical machine to move about on city streets. It's power plant is either a 391 cu. in. Ford or a 453 GMC diesel. For more information about Vermeer's chipper, circle (720) on the reader service card.

Machines evaluated

Both machines were demonstrated at the same time the first of September outside of Detroit, Mich. Some 200 persons, representing municipalities, parks, highway departments, pollution control boards, and so on, watched the performance. Among visitors were Bob and John Peterson, whose wood chip products company was the first purchaser of both machines.

Bob Peterson evaluated the two machines, conceding that they can't be compared with each other any better than comparing apples with oranges. "They actually complement each other," he said. If a city had to go the "either, or" route, then the kind of disposal program—whether and how the chips were to be marketed—has a definite bearing, he added.

Fewer saw cuts are necessary to prepare a tree for the Chiparvestor, which takes any length, and has tremendous speed, he said.

For city tree disposal, Peterson believes that the 20-inch diameter limitation may be somewhat of a disadvantage. "Many of the trees dying in the city are the larger, older trees," he pointed out. "To get rid of these, you would have to get a log splitter at a cost approaching the price of the Vermeer machine."

"You never drop a whole tree in the city," he continued. "And many of these trees have large lateral branches. So the need for cutting trees into six-foot lengths for the Vermeer may not be a disadvantage at all.

While the Vermeer chipper is far slower than the Chiparvestor, Peterson reminded that for the same money a city could buy four or five Vermeer machines and get a greater volume of chips. The cost of operating five machines as opposed to one would have to be weighed against the advantages of judiciously employing multiple machines to lower hauling costs.

One of the hazards of chipping "trash trees," Peterson said, is encountering metal objects. During the Detroit demonstration, the Vermeer machine chewed into a 12-inch lag bolt, breaking two or three of the 45 cutting teeth. Had the bolt gone through the Chiparvestor damaging one of the three blades, Peterson estimated the chipper would be out of action longer in order to change the blade.

Chicago Disposal Operation

Chicago is one of eight cities and private contractors that have purchased Chiparvestors, introduced early this year. Ray Toren, who's directly in charge of the Morbark machine for the Chicago forestry division, said his crew on the 100-ton model had been averaging 30 tons of chips per day, a phenomenal amount, considering the "dead time" that inevitably occurs between feeds. Peterson reported the same operating capacity for his 100-ton model.

"We once turned out 12 tons in an hour and 17 minutes," Toren said. "Volume depends on skill of the clam operator, kind and condition of wood, moisture in the wood, and sharpness of the blades."

So far, Jim Garvey said, keeping the blades sharp has been a big problem. "You have to sharpen them practically every day. We ordered extra blades. Right now we're using the same grinder we sharpen

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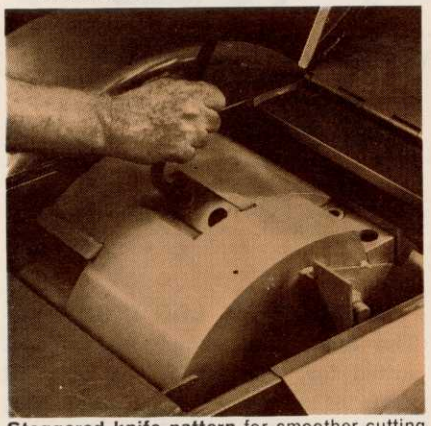
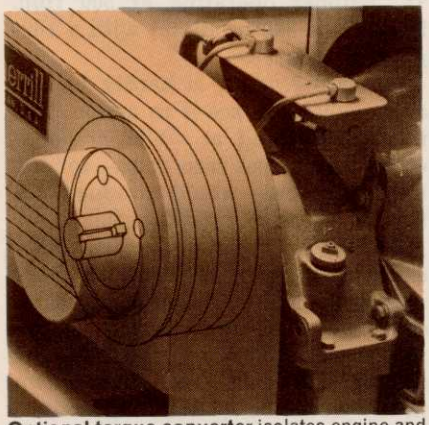
For more than 115 years Mitts & Merrill has been making specialized machinery for industry. A major part of our business is equipment to reduce scrap and waste. This experience is incorporated into design features on our brush chippers that result in higher efficiency and longer, trouble-free service for you. Only Mitts & Merrill brush chippers offer features like these:



Staggered knife pattern for smoother cutting action. Mounted on an all-steel cylinder that, even without an external flywheel, is heaviest in the industry. Each cylinder revolution gives more cuts, produces smaller chips of uniform size. Self-adjusting knives are reversible; give twice the service between sharpening.



Optional torque converter isolates engine and transmission from cutting shock to minimize maintenance. Makes operation virtually fully automatic; increases operator productive time. Available on all models.

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Vermeer's 604 log chipper is designed to take tree sections six feet long and up to 4 ft. in diameter.

our standard chipper blades."

The high-speed Chiparvestor is working hand in glove with Chicago's speeded up system of tree removal, said Garvey.

Under the old system, Garvey explained, everything was cut down into "man-handling size." meaning one or two men could load the typical 2½-ton city truck. Now, the city has leased trailor transport trucks from commercial tree companies, including units equipped with clam-type loaders. The larger trucks, Garvey said, "have 10 times the capacity."

Formerly, the tree-removal crew consisted of the driver of the 2½-ton truck, foreman, and three men. Some of the trucks had a 1,000-lb. hoist. The removal task force now consists of a clam bucket loading truck, two heavy-duty dump trucks, the clam operator, six men, and a supervisor.

On the day of interview, by 2 p.m., a task force had felled and transported away nine typical-size street trees.

You have to be aware of the enormity of the tree-removal task that Forestry General Superintendent Robert Zralek faces in Chicago to appreciate the value of machines like the Chiparvestor. His bureau has a backlog of 23,000 dead trees to remove. "We expect 40,000 more to die this year and each succeeding year," said Garvey.

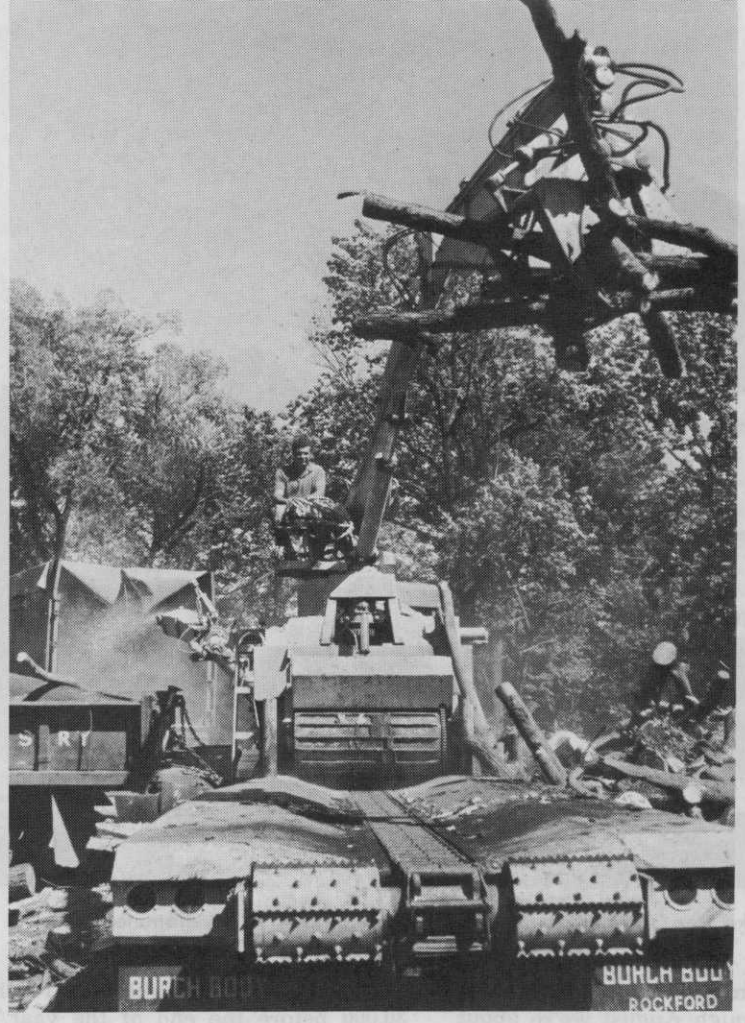
"Tree removal goal this year is 50,000. Through August we're about 300 ahead of schedule." That means crews have removed about 34,000 trees.

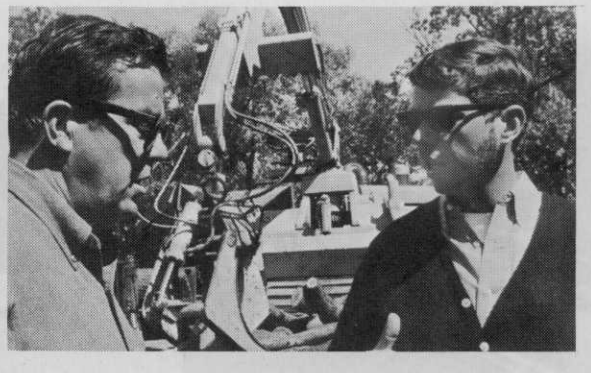
But tree removal is only half of the Chicago story. "We've planted 12,000 trees so far and will reach 30,000 before the end of the year," said Garvey.

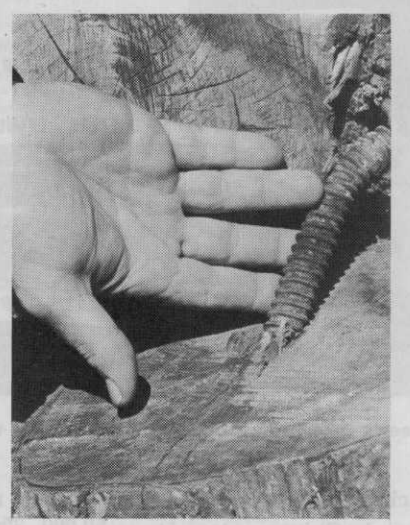
Trees that are going in are silver maple, Norway maple, green ash, honey locust, pin oaks, sycamores, and others. "The problem is getting

The Vermeer chip.

The Chiparvestor chip.







The City of Chicago has purchased a 100-ton model of the Chiparvestor, shown in action above. District Tree Foreman Jim Garvey, left, discusses its operation with Ray Toren, who's directly responsible for keeping the chipper running. A hazard, Toren says, are embedded metal objects, such as this old cable brace.

Make it easy on yourself.

So you are responsible for cleaning up parks, industrial plants, colleges, golf courses, schools, cemeteries or what? Well then, decide on 4 or 6 H.P. Lindell 722-30 vacuum power sweepers. Easy to handle, roll and operate. Height adjustments from 0" to 4". Picks up leaves, paper, wrappers, sticks, etc., easily, quickly. Optional vacuum hose available. Think Lindell for ease—and profit.

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big enough quantities—we have to take what we can get," he said.

The goals projected for 1971 are: To remove 60,000 trees; spray to control Dutch elm disease on 40,000; plant 30,000; and trim 20,000.

Chicago has been selling some chips to a firm that utilizes the fibers in making paper siding material and roofing material. "We've sent some loads of chips to our incinerators," Garvey said. "They're tickled to get them. The chips provide good combustion to aid the elimination of wet garbage. We have three incinerators and are getting one more in 1971."

Markets for Wood Chips

Bob Peterson offered an idea of what kind of wood chip products might be developed and what markets could be tapped.

"Our best is a premium chip that has less than 1% bark. It goes to paper companies, and they take all we can give them. Our No. 1 chip is a high quality chip with bark material screened. This goes as mulch around homes, commercial buildings, playgrounds and trails. We also sell a bark mulch for the same places plus bedding for animals. We have a byproduct we call fines that's being offered as kitty litter and for mulching plants such as raspberries and strawberries."

Peterson said his rate to the public for chips was $10 per cubic yard for the premium chip; $8 for No. 1; $7 for bedding material; and $3 for bark.

He estimated a ton of wood would produce about 4-5 cu. yds. of chips.

Incineration vs. Utilization

David L. Phillips, superintendent of forestry, Lansing, Mich., discussed waste wood disposal—incineration vs. utilization, at the August International Shade Tree Conference. "Of the two solutions," he concluded, "I favor wood utilization because it uses the recycling principle." But he added that more research is needed on both methods before either could be considered permanent answers to the waste wood disposal problem.

Phillips talked about both big tree chippers and about the arrangement the city has with Peterson Wood Chip Producers. Problems that remain when using the chippers

are: the need for additional markets for chips, disposal of logs with metal objects, stump disposal, and more efficient handling and preparation of brush and log mixtures for the chippers.

He described the incinerators the City of Detroit built for waste wood disposal as even more costly than the chippers. The two, built in 1963 and 1965 each cost about $250,000. About 100 feet long and 20 feet high, they're constructed of brick with a refractory lining.

Charging is done through two 14-ft. doors. Brush and limbwood goes in one at the end and logs through the other a midpoint. Forced draft is used, but no supplemental fuel. Temperatures are maintained between 1,800 and 2,000 degrees F. A 20-inch log burns in about four hours.

But during peak removal periods, Phillips reported, the burners are unable to keep up.

Exhaust gases are passed over a series of baffles and a water spray scrub chamber to remove fly ash before venting to the atmosphere via a 120-foot stack.

Emission is exceptionally clean, consisting entirely of carbon dioxide and water vapor, plus atmospheric nitrogen," Phillips said.

Disadvantages aside from initial and maintenance cost, he said, are that no useful product is produced, modifications are sometimes necessary as pollution codes change, and stationary location means costly travel time.

Chicago has expedited its tree removal operations by using clam-type loaders and trailer transport trucks leased from area commercial tree companies. This truck is owned by Jackson Tree Service.

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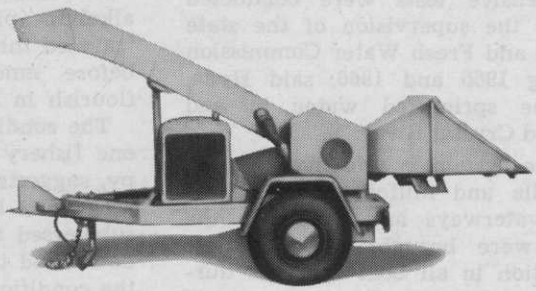

. . . about how much better and more economical our chippers are than anything else they've used.

Of course, we design and build them that way. The heart is the 300-pound flywheel and high-speed, tapered blade which chew smoothly, inexorably, through the work material with the safe flexibility that only Asplundh's special engineering features can provide.

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Florida Engineer Patents
HYDRIONIC METHOD
For Controlling Weeds in Running Water

A METHOD OF killing elodea with commercial sulfuric acid has been patented by Robert W. Hyde of Crystal River, Fla. The president of Hyde Engineering Company says the technique will also eliminate other aquatic weed species without harming fish and other wildlife.

Extensive tests were conducted under the supervision of the state Game and Fresh Water Commission during 1965 and 1966, said Hyde, in the spring-fed water in and around Crystal River.

"The system is effective on both hydrilla and milfoil, and most of the waterways and canals in the area were brought into weedless condition in all boat channels during these two years."

Traditional mechanical and chemical approaches to aquatic weed control in the area were complete failures, Hyde contended. The result, he said, was "killing nearly all of our game fish without seriously affecting the weed growth."

"The most important factors of our treatment method," Hyde explained, "are that there is virtually no fish kill, weed eradication is nearly complete, regrowth does not take place within the next six to nine months, and treatment can be done at an average cost of from $10 to $20 per acre."

Crystal River presented some rather unique water conditions that contributed to weed growth and at the same time rendered weed control methods ineffective.

"Our tremendous spring flow—more than two million gallons per hour—plus tide action were just too much water movement to allow chemicals to do their work," said Hyde.

In addition, the water was highly alkaline (pH of about 8.5), having traveled through miles of lime rock before emerging. Aquatic weeds flourish in alkaline water.

The conditions are so unique that one fishery biologist, C. L. Phillippy, suggests that the use of sulfuric acid as a herbicide for control of submersed aquatic vegetation "may be limited to water areas similar to the conditions on Crystal River.

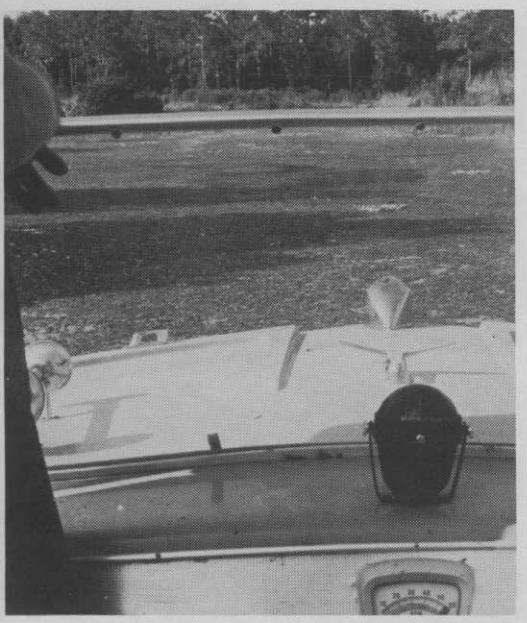
"Neutralization and dilution by the waters of the many springs, tidal effect, and extensive deposits of calcium carbonate combine to contain the action of the acid within an area in proportion to the magnitude of the problem.

"Its use in static water situations, such as lakes, ponds, reservoirs, and canals with deep cut gliding channels, may create more problems than it solves.

In the Crystal River situation, Phillippy said, "Sulfuric acid did effectively remove elodea from the main channels apparently causing little damage to the fish population. The amount of damage varies from application to application, depending on tidal effects, proximity of springs, and escape route available to fish in the area."

A $150-test using commercial sulfuric acid and the hydrionic method produced this result in 10 days, says discoverer Robert W. Hyde.

Hydrilla and watermilfoil brought boat traffic to a dead end in fast-flowing Crystal River and canals leading into it. Conventional weed control efforts failed completely.



Hyde, an electro-mechanical engineer and avid bass fisherman and water explorer, turned to a different approach to solving a problem that developed in 10 years after Crystal River had been true to its name for thousands of years. The problem developed from three factors, said Hyde: commercial development of the river banks and the construction of miles of lateral canals, an aquarium nursery venture that got out of hand, and mechanical harvesters ("They might better be called cultivator and spreader," he said).

He was critical of harvesters in this situation because the aquatic varieties being mowed propagate from fragments.

Hydrilla was planted in Crystal River about 20 years ago, Hyde said, by people dealing in the plants and furnishing them to the aquarium trade. The plant is an excellent oxygenator, he said, and grows well in aquariums. As the demand for plants grew, he continued, someone thought of planting hydrilla in the natural spring waters.

Normally, the plant spreads only about six feet a year, Hyde estimated, so planting was not, in itself, a wrong doing. Commercial development, however, brought great numbers of small boats that churned through patches of Elodea. These floated around the bay and canals and finally took root.

The purchase of a mower by the county commissioners, said Hyde, "really finished the job of solidly seeding all the other canals, and, in fact, the whole bay."

Beginning his testing with glass jars and weed fragments, Hyde discovered that by lowering the pH level to 6, the plants died rapidly. Further tests showed that short term contact at higher concentrations of acid also killed the plants.

"Actually, several methods of complete control of elodea and other similar weeds are now practical through the hydrionic method. Most aquatic weeds are extremely sensitive to sudden pH changes, and a change of little more than two points will generally kill all weeds. Lowering the pH of a lake to six will not only kill all present growth but if slight amounts of acid are added from time to time to keep the pH around 6 no regrowth will occur. This is very significant because no fish are affected at this pH. Most game fish are quite comfortable at a pH of 5.

"Canals can be cleaned out very economically by simply dumping in quantities of acid necessary to lower the pH more than two points, even if only on the bottom few inches. Sulfuric is so heavy (nearly twice the weight of water) that it sinks immediately to the bottom and spreads out contacting the stems at the root joints where they soon rot off and float out. If not disturbed by wind or tide, complete decay is always evident in less than two months. This method works equally well on Eurasion milfoil.

"Most Florida waters are so heavily alkaline that the acid is completely buffered out in 24 hours."

Some members of a committee from the War on Weeds Society, Inc., told the Ocala Star-Banner, after evaluating tests, that because the acid had the effect of creating large floating masses, harvesting of the treated weeds might be a necessary part of the treatment.

In one test, the floating mass of elodea was trapped against a bridge and took two months before it completely disintegrated. Where tidal action is present, the masses are carried to sea and destroyed by the salt water.

"Patent rights are available to anyone interested on a modest basis," Hyde said. Hyde Engineering Company, he said, is concerned with developing electro-mechanical products and has "no intention of entering into weed eradication business other than in an advisory capacity."

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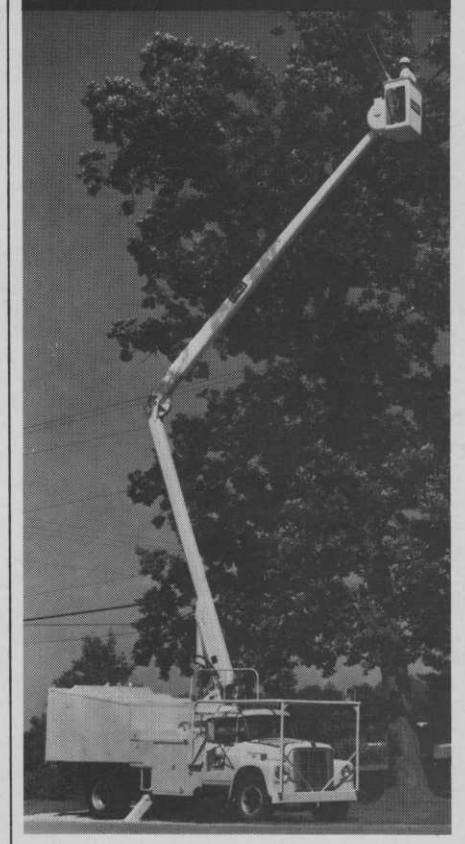

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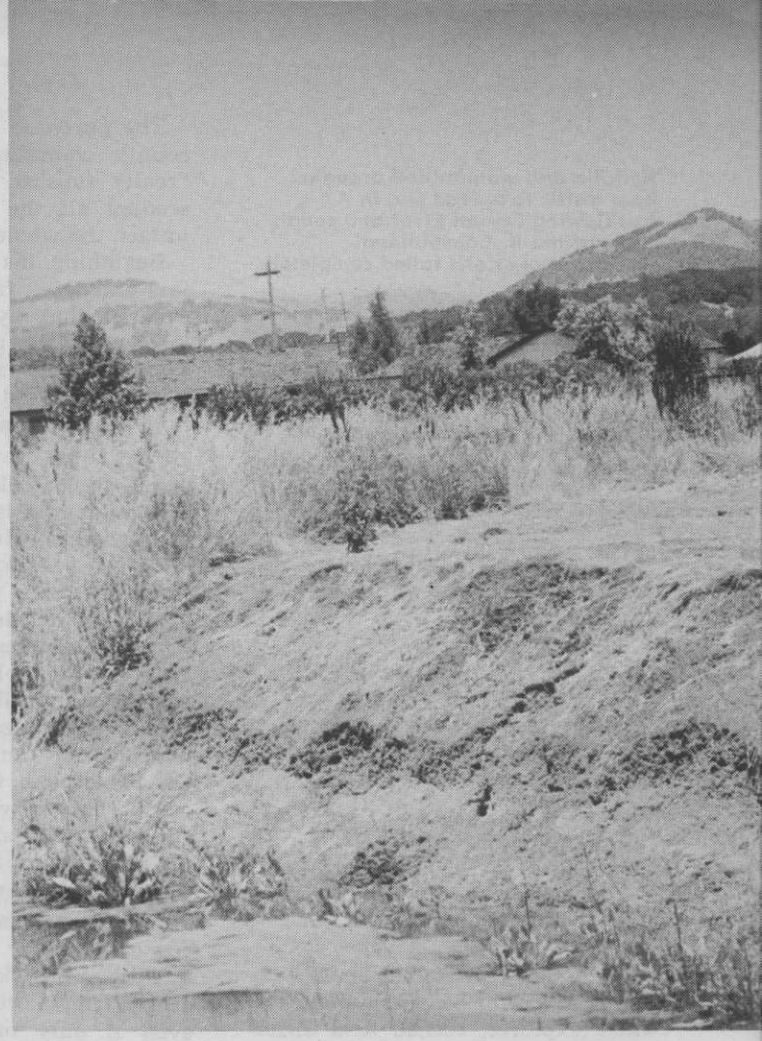

Sonoma County Water Agency got this kind of weed control along multiple-use irrigation ditches with Princep. The picture at right shows the difference where a test application ended.

How California Water Agency Is Tackling

Irrigation Ditch Weed Control

Weeds had harbored rodents, obstructed water flow, and created a fire hazard.

SONOMA COUNTY Water Agency, north of San Francisco, is a prime example of a non-agricultural industry now recognizing the need for a safe, economical and effective weed control program.

Before adopting their new herbicide plan, Chief Engineer Gordon Miller and Superintendent of Maintenance Al Williams conducted exhaustive comparative weed control experiments.

"Weeds mean nothing but problems," says Maintenance Foreman Dave Hillendahl. "If weeds along a channel bank are heavy, they will conceal erosion problems until they become major.

"If local farmers are using the channels for irrigation, as is the case in Sonoma County, weed-free banks are an important requirement. Seeds from weeds can get into the water and be carried into the fields. Suddenly the farmer has

a problem he never had before.

"Excessive weeds anywhere can harbor rodents and insects. By eliminating the weeds, you cut down the places where pests can survive and multiply."

Esthetically, most weed species are a detriment. "During the winter, when they are green, it's not too bad, but in summer when everything turns brown, weeds are a definite eyesore and a fire hazard."

When it comes to controlling weeds, Hillendahl is a firm believer in herbicides for ease of application, cost, labor efficiency and selectivity in weed and grass control.

"We have some areas that would be impossible to maintain if we had to disc or mow for weed control. With a chemical program, per acre cost is decreased considerably, and the use of the labor forces is more efficient."

In selecting a herbicide, Hillendahl says, "We choose a material that will fit a variety of needs, including landscaping, cover crops, and channel maintenance." Last year the agency treated most of its system with Princep (simazine).

"With some materials, we have observed photo-decomposition and resulting less than desired weed control. This is not the case with Princep. Therefore, we can apply Princep as we do as early as August with good results.

"This was learned during the early years of the program through practical application and experimentation with many products.

"Other difficulties encountered at this time included excessive leaking of some materials and hazard to adjacent desirable plantings through lateral movement.

"A large number of our channels are near or actually border subdivisions, orchards, vineyards, landscaped areas, etc. Princep had none of these problems."

"Princep gives us year-long weed control. It controls all of our annual weed and grass problems plus many perennials," Hillendahl says.

"With Princep we are using a material we know will do the job—we know just what it will and will not do. Our crews all know the capability of the product and how to use it so they won't contaminate irrigation, drinking water, lakes and streams. This is a must for any public agency. With this understanding, the crew can answer any pertinent questions from adjacent property owners or other concerned citizens who should inquire about the material or program."

Another factor Hillendahl must consider is that the entire network takes several months to cover completely.

"In order to get the chemical on by the time the rains begin in November, we must begin application in August. Princep will remain on the soil surface until the rainfall moves it into the soil. Often that is as long as three months."

Princep also was chosen because it can be used as a selective herbicide around certain ornamental plantings.

Instead of using a boom for spraying, Hillendahl designed his own equipment. He affixed two OC flood jet nozzles to the back corners of his 1,000-gallon tank truck.

"We get better coverage with this set-up," says Hillendahl, "and our nozzles don't plug up as they did with a boom. This operation is just better all the way around."

Rates were 10 pounds per acre in all areas except landscape areas where reduced rates are used per label recommendations.

This water agency is supported by the county tax structure plus some state and federal monies for certain projects.

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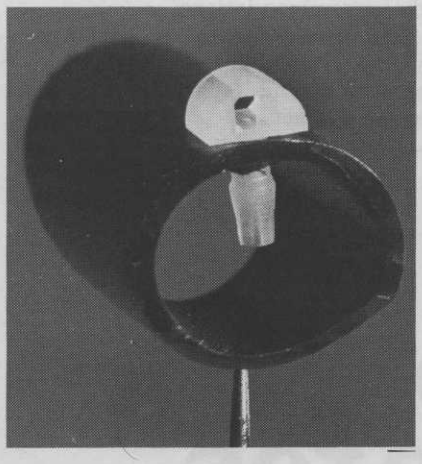
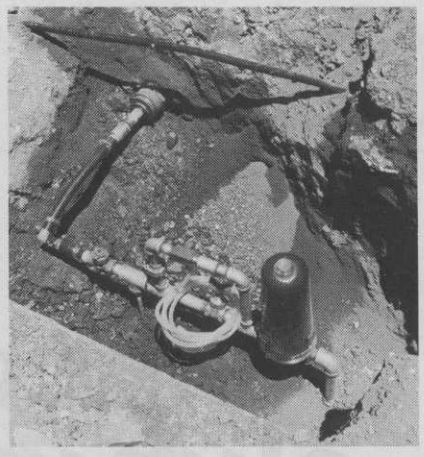
Turf Irrigation and Fertilization

WHAT'S GOING ON UNDERGROUND



Nylon insert orifice projects into half-inch plastic pipe.



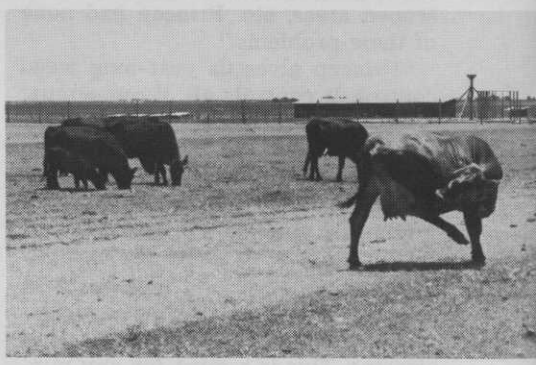
A filter and fertilizer applicator can be integral part of the system.

SUBSURFACE IRRIGATION sounds like the ideal way to add moisture to soil. The hangup has been the conception of a workable system that could be installed and maintained at a reasonable cost.

A firm in Lubbock, Tex., Submatic, Inc., thinks it has developed an efficient and profitable answer. The system has been applied to pastures, lawns, parks, highway median strips, orchards, and so on.

The new Submatic system employs a nylon insert orifice that is placed in one-half-inch-diameter polyethylene plastic pipe, either by machine or hand tool. The inserts placed by machine are spaced in the pipe every 36 inches. The pipe is installed below ground from two to six feet apart with a small vibrating machine, chisel or trencher. Depth is determined by soil type, root structure and other factors.

Application rates, say Submatic engineers, are low, ranging from one-twentieth to one-fifth of an inch per hour; and the system is operated at low pressures of from one to five psi at the orifice. A filter



A small vibratory plow pulls pipe below ground. The Dick Park residence, left, has been irrigated the past two seasons. A non-irrigated strip of bermudagrass pasture on the Ted Wood farm shows what a difference a little water can make. Allen Forkner of Lubbock is watering 18,000 sq. ft. with only 4 gpm of water available.

system is necessary, and a sand trap may be required.

The nylon insert orifices are uniform in size, low in cost and available with the pipe, or may be purchased separately. A simple hand tool may be used to place the inserts into existing pipe.

"Prescription-placing" of orifices was used in the system recently installed in an orchard of 1,500 apples and 500 pecan trees in Knox County, Tex., owned by Dr. James F. Harber of Odessa, Tex. Because the trees were young and required only small amounts of water to get them established, only two Submatic insert orifices were used at each tree.

Dairyman Ted J. Wood of New Deal, Tex., is currently grazing 35 head of cows and 35 calves on five acres of subsurface irrigated pasture. Wood has indicated he intends to add 20 acres more. He performed the installation work himself, purchasing a small trencher. Having tried the pipe with a drilled orifice, he new plans to use only the insert orifice. He has obtained better results and a more uniform distribution of water with it.

Dick Park of Lubbock attributes the excellence of his lawn to the below-ground system, citing the advantage of placing the right amount of water at the right time and at the right place; also, that fertilizer can be applied through the system. He believes that because the root zone is kept moist while the top soil is kept dry, a healthier plant results.

Recently, the City of Lubbock Parks and Recreation Department installed the Submatic system in a median strip of turf along heavily traveled Indiana Ave. The idea was to save water and also to prevent the spraying of passing cars.

Although the system can be automated, say Submatic engineers, most users find that since large areas can be irrigated at one time—depending only upon the amount of water available—it is an easy matter to open and close valves. If additional information is desired, circle (721) on the reply card.

Enzyme Stops Growth Of Bent on Hot Day

A Michigan State University scientist believes he's found why golf course greens and bentgrass lawns stop growing when surface temperatures go above 95 degrees.

The reason could be an enzyme called nitrate reductase. By selecting grasses with stabilizing levels of this enzyme, golfers and homeowners might have a little less to moan about during hot days.

Speaking at the annual meeting of the American Society of Agronomy, John E. Kaufmann, MSU turfgrass researcher, reported that growth and nitrate reductase induction in bentgrass ceased at 95 degrees. But both growth and the enzyme were still going strong in bermudagrass at 104 degrees.

So Kaufmann isolated the enzymes from the two grasses grown at 77 degrees and tested them again. This time, the bentgrass stopped functioning at 104 degrees, but the bermudagrass kept on going.

"We concluded that the stoppage of bentgrass growth was related to this enzyme, which changes nitrate to nitrite," he said.

Kaufmann and Drs. James Beard and Donald Penner, MSU crop scientists, made their findings after studying enzymes of Tifgreen bermudagrass and Toronto bentgrass. Bentgrass, commonly used on northern golf greens, will quit growing during hot days, forcing greenskeepers to cool the greens to encourage enough growth to recover from the wear and tear of golfers.

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Terra-Green Special Top-Dressing is free-flowing for easy spreader application, non-toxic, non-caustic and will not burn grass or roots. Send for a free demonstration sample and make your own test of the remarkable absorbency that makes it No. 1 for golf courses, parks, athletic fields, home lawns, etc.

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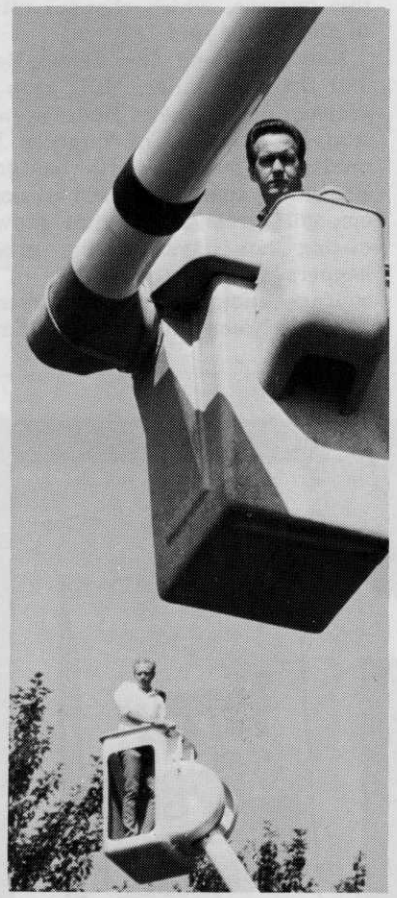

Error in Bucket Rescue

I wish to call your attention to an error in your article "Bucket Operator Rescue" in the August issue. Paragraph 13 should read: "Steps 8 and 9 will be practiced at least once each month. Steps 10 and 11 will be explained in conjunction with practice. Each new employee will become proficient in mounting the truck and lowering the bucket, steps 8 and 9, on the first day of employment."

EDITOR'S NOTE. Sorry about that one. We juggled the paragraphs but forgot to change the references. Because those paragraphs are so important, we're repeating them:

8. *To gain quick access to the controls and minimize personal danger in lowering the victim, take a running start and jump onto the running board of the truck from at least six feet away, grasping the west coast mirror frame with your hands. Make certain you do not touch the truck and ground at the same time. Where it is not practical to jump on a running board, jump on the chipper from at least six feet away and move over the truck body to the controls.*

9. *Once on the truck, move quickly to the controls, lower the bucket and victim away from the energized wires and to the ground (as an alternative, remain on the truck and manipulate an outrigger).*

10. *Remove the victim from the bucket and lay him on his back in a position to administer mouth-to-mouth resuscitation and closed chest heart massage. Clear the victim's mouth and tilt his head back to clear the air passages. If the victim does not breathe, seal his mouth with your lips, hold his nostrils closed and blow in breaths strong enough to cause his chest to rise, at the rate of 12 times per minute. If for any reason it is not possible to remove the victim from the bucket immediately, mouth-to-mouth resuscitation should not be delayed but should be administered while the victim is being removed.*

11. *Check the victim's pulse for a heartbeat by pressing two fingers lightly along the windpipe. If the victim has no pulse, it will be necessary to administer heart massage in conjunction with mouth-to-mouth resuscitation. To administer closed chest heart-massage, locate and place the heel of one hand on the lower half of the breastbone. With the other hand on top, apply sufficient pressure to depress the lower half of the breastbone 2½" at the rate of 60 times per minute or five times between breath blown into the victim's lungs.*

Additionally, the pictures with the article show an operator in an open-sided bucket. Farrens Tree Surgeons does not use, nor do we advocate, the use of the open-sided buckets in tree work. —N. I. JOHNSON, training and development director, Farrens Tree Surgeons, Jacksonville, Fla.

Liked August Editorial

I compliment you on your fine editorial contained in the August issue. I concur wholeheartedly with your thoughts and compliment you on the manner in which you put them forth. — DOYLE JACKLIN, Jacklin Seed Co., Inc., Dishman, Wash.

More Like Markstein's

Let us have more articles like David Markstein's on inflation in the July issue. This is one of the most effective and informative articles on this subject I have read. — L. B. HAWKINS, The Best Fertilizers Co., Lathrop, Calif.

Thanks for August Issue

We would like to express our appreciation of the August issue, particularly the article referring to the experiences of the Asplundh Tree Expert Company and the maintenance article by Ray Gustin, Jr. We sincerely appreciate receiving your monthly magazine and look forward each month to its arrival. — JAS. T. TURNER, Turner Tree Service, Atlanta, Ga.

Right Helicopter; Wrong Name

Just a word to express our appreciation of your featuring one of our fine customers, Asplundh Aviation, Inc. Your article was informative and well written.

Unfortunately, you have incorrectly labeled a picture of our turbine-powered JetRanger with the name of a competitor's helicopter.—B. C. CRYER, supervisor of commercial marketing, Bell Helicopter Co., Fort Worth, Tex.

meeting dates

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Roadside Development 29th Annual Short Course, Department of State Building, 65 South Front St., Columbus, Ohio. Oct. 5-9.

Florida Turf-Grass Management Conference, Flagler Inn, University of Florida, Gainesville. Oct. 6-8.

10th Annual Southern California Turfgrass Equipment and Materials Educational Exposition at Brookside Park, Pasadena, Oct. 14-15.

Texas A&M University 5th annual Industrial Weed Control Conference, on campus at College Station, Tex., Oct. 19-21.

Louisiana Turfgrass Association annual conference at the Holiday Inn, Alexandria. Nov. 4-5.

Michigan Pesticide Association fall conference at the Jack Tar Hotel, Lansing. Nov. 4 and 5.

10th British Weed Control Conference at Hotel Metropole, Brighton, Sussex, England. Nov. 16-19.

Metropolitan Washington, D.C., Shade Tree Conference, Lubber Run Recreation Center, 300 N. Park Drive, Arlington, Va. Nov. 19.

Ohio Turfgrass Conference and Show at the Cincinnati Convention Center. Dec. 7-9.

National Aerial Applicators Association fourth annual conference at the International Hotel, Las Vegas, Nev. Dec. 7-10.

North Central Weed Control Conference 25th meeting, Phoenix Hotel, Lexington, Ky. Dec. 8-10.

Rutgers University, New Brunswick, N. J., second term of winter turf course. Jan. 5 to Mar. 12.

Georgia Golf Course Superintendents Association annual meeting at Callaway Gardens, Pine Mountain. Jan. 10-12.

Mid-Atlantic Association of Golf Course Superintendents turf conference at the Holiday Inn, Howard and Lombard Sts., Baltimore, Md. Jan. 11-12, 1971.

University of Nebraska annual turf conference, Lincoln. Jan. 13-15.

Rutgers University, New Brunswick, N. J. three-day lawn and utility turf course. Jan. 18-20.

Southern Weed Science Society 24th annual meeting at the Sheraton-Peabody Hotel, Memphis. Jan. 19-21.

Rutgers University, New Brunswick, N. J. three-day golf and fine turf course. Jan. 20-22.

Associated Landscape Contractors of America ninth annual meeting and trade exhibit at the Royal Orleans Hotel, New Orleans. Jan. 24-30.

Virginia Turfgrass Conference at the Sheraton Motor Inn, Fredericksburg, Va. Jan. 26, 27.

The Northwest Horticultural Congress at the Portland Memorial Coliseum. Jan. 28-30.

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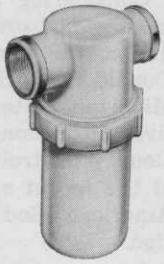
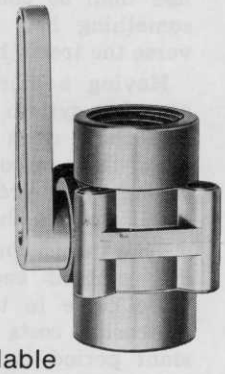


¾" PORTS

Plastic ball valves



Quick-turn shut-off valves of polyvinyl chloride can't rust, last for years. Other plastic and elastomer materials, including ABS, are also available. Double buna-N seals assure positive, leak-proof operation. Both straight shut-off and 3-way types are available.

Two body sizes – ½ and ¾ inch. ½ inch valves are available with ports threaded ½" NPT male or female, ¾" NPT male, with ⅝" hose barb or socket for ½" or ¾" plastic pipe.

¾" valves are available with ports threaded ¾" or 1" NPT female, or with sockets for ¾" or 1" plastic pipe.

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Cooperative Extension Service
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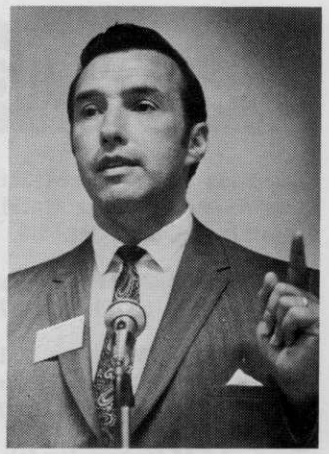

HOW DO YOUR PRODUCTION COSTS MEASURE UP?

Michigan sod producers discovered recently that they were dangerously close to not making any real profit.

While they were getting paid for their labor, they found they would have been financially ahead had they sold their farms and placed the money in a bank to draw interest.

Considering that Michigan is the leading sod-producing state in the nation, the news is a bit startling. Donald D. Juchartz, director of the Michigan State University Cooperative Extension Service in Wayne County (Detroit), gave the full story at the recent annual meeting of the American Sod Producers Association.

Leading growers who had watched the field price of sod shrink from $1.00 per yard (Merion in 1948) to less than 30 cents in 1969 decided something had to be done to reverse the trend, he said.

Having a more sophisticated accounting system than most producers, they were getting red flags from their accountants who were saying "your profit margins are too small and are shrinking each year."

They were particularly alarmed and puzzled because the drop in price came in the face of rapidly increasing costs and during a constant period in which the demand for sod exceeded supply.

They noted, Juchartz reported, the repeated occurrence of new growers needlessly cutting prices to get into the market. They were aware also that producers generally had succumbed to "winter jitters" and had reduced prices at the beginning of a new season.

Why had growers collectively allowed such a trend? Juchartz suggested that lack of communication was a big reason. "Over the years, the sod business had been highly profitable, and growers were saying 'We're going to run our own business'," he said. There was very little comparing by one grower with another."

As competition stiffened and costs went up while prices went down, they attempted to keep income at the same level by increasing sod acreage and sod sales.

What was missing, Juchartz continued, was the awareness that they needed to think like businessmen. "They were enjoying a good life, but they had forgotten that the name of the game is profit," he said.

The handful of sod producers who recognized the gravity of the situation determined that growers generally were operating in the dark concerning sod production costs. What was needed was a financial management education program to help the grower think like a businessman.

The leading sod growers worked with Juchartz to arrange the seminar. They were Bob Daymon, Emerald Valley Turf Nurseries, Gregory; Bob Hozak, Tech Center Sod Farm, Fowlerville; and Ted Bosgraaf, Blue Grass Sod Farm, Hudsonville.

Juchartz called in three Michigan State agricultural economists, Drs. Ralph Hepp, Myron Kelsey and Warren Vincent.

Together, the growers, agricultural economists and Juchartz developed then conducted a three-day intensive short course in February of 1969.

Here is how Juchartz described the meeting in a report to Michigan sod producers.

"There was considerable skepticism and little enthusiasm by growers during the first session. As the sessions went on and the facts were brought out, with most being supplied by the skeptics, a reverse in thinking was noticeable.

"An almost unbelievable change took place in the attitudes of the growers as one fact shed light on another. They realized that this was being done, not for the benefit of one or two, but for the benefits it would bring to the overall industry.

"It was decided through the course of the meetings to develop a hypothetical, 200-acre 'Case Sod Farm.' While the Case Sod Farm was to be hypothetical, it would be based on facts supplied by the growers attending the meetings.

"This was done, with each item and every factor analyzed, discussed and dissected until there were no objections from any person there that the fact or figure arrived at was correct. As these facts and figures were accumulated, they were organized into the form of a financial and profit and loss statement for the Case Sod Farm.

"The results were startling to the group, even though they had supplied the facts.

"The Case Sod Farm Report showed that the cost of growing sod on the average farm in Michigan in 1969 was 29 cents per yard."

Among developments after the seminar, Juchartz continued, were the organization of a state association and the circulation of a market report on a weekly basis. Members reported such statistics as acreage planted and yardage marketed, price charged, etc. The figures were compiled and a report returned to participating growers.

The significance of the service, Juchartz reported, is that for the first time in history, sod prices held through the spring and summer of 1970. Growers estimated that the program brought them an additional half-million dollars in income.

The Case Sod Farm Report is reproduced in this issue as a guide for producers elsewhere to determine what their production costs might be. For, Juchartz concluded, "What has happened to Michigan may happen in other parts of the country."

CASE SOD FARM FINANCIAL STATEMENT

CURRENT ASSETS	
Cash	$ 5,000
Accounts Receivable	2,000
Supplies	2,000
Growing Sod (175 A's @ $400/A)	70,000
Total	$79,000
INTERMEDIATE ASSETS	
Machinery & Equipment	105,100
Accumulated Depreciation	(37,100)
Total	$ 68,000
LONG TERM ASSETS	
Buildings & Improvements	45,000
Accumulated Depreciation	(9,000)
Land	130,000
Total	$166,000
Total Assets	**$313,000**

CURRENT LIABILITIES	
Total	$20,000
INTERMEDIATE LIABILITIES	
Total	$30,000
LONG TERM LIABILITIES	
Total	$ 83,000
Total Liabilities	$133,000
Owner Equity	$180,000
	$313,000
Total Acres	350
Tillable Acres	200
Harvested Acres	100

OPERATING RECEIPTS

		Total Farm	Per Yard
Sod Sales (400,000 yds.)		$120,000	.3000

OPERATING EXPENSES

Labor		$47,800	.1195
1—Owner-Operator	$15,000		
1—Full Time Man	10,000		
6—Apr. 15 to Nov. 15 (110/wk)	19,800		
1—Part Time Office	3,000		
Above Includes Workmen's Compensation, S.S. Etc.			
Power & Machinery		24,250	.0606
Depreciation	13,100		
Repairs	6,000		
Gas & Oil	3,000		
Machine Hire	2,000		
License	150		
Buildings		6,100	.0152
Depreciation	4,500		
Insurance incl. Liability	1,600		
Crop		17,300	.0432
Seed	5,000		
Fertilizer	10,000		
Chemical Spray Material	2,300		
Overhead		20,550	.0514
Utilities	3,000		
Office	1,000		
Legal & Accounting	1,000		
Property Taxes	2,100		
Travel & Entertainment	500		
Interest	11,000		
Supplies	1,000		
Miscellaneous	950		
	Bad Debts		
Total Operating Expenses		$116,000	.29
Profit before Taxes		$ 4,000	.01

FINANCIAL STATEMENT

1. Total current assets	$ 79,000
2. Total intermediate assets	68,000
3. Total long term assets	166,000
4. Total Assets	313,000
5. Total current liabilities	20,000
6. Total intermediate liabilities	30,000
7. Total long term liabilities	83,000
8. Total Liabilities	133,000
9. Owner Equity	180,000

INCOME STATEMENT

10. Value of farm production	120,000
11. Gross profit from operation	19,000
12. Profit (Loss)	4,000

FINANCIAL STATEMENT RATIOS

13. Current ratio (line 1 ÷ line 5)	3.95
14. Intermediate ratio (line 2 ÷ line 6)	2.26
15. Long term ratio (line 3 ÷ line 7)	2.00
16. % current debt (line 5 ÷ line 8)	15%
17. % intermediate debt (line 6 ÷ line 8)	23
18. % long term debt (line 7 ÷ line 8)	62
19. Debt to total assets (line 8 ÷ line 4)	42
20. % depreciation of machinery	35
21. % depreciation of improvements	20

INCOME STATEMENT RATIOS

22. Return on owner equity (line 12 ÷ line 9)	2.2%
23. Return on assets	4.8%
24. Gross operating margin (line 11 ÷ line 10)	15.8%
25. Net operating margin (line 12 ÷ line 10)	3.3%

MANAGEMENT FACTORS

26. Crop factors Costs Per Yard Sod Sold	
27. Management Labor	.0375
28. Cash Labor	.0820
29. Power & Machinery	.0606
30. Buildings and Improvements	.0152
31. Crop	.0432
32. Overhead	.0514
33. Total	.2900
35. Harvest Acres as Percent of Tillable	50

The "Great Northern," piloted by famous music conductor David Rose, hauls a load of Cal-Turf dichondra sod to the backyard of his Sherman Oaks, Calif., home.

Musician Hauls Sod by Train

It probably was one of the most unusual loads the rugged little train ever pulled, but the "Great Northern" hauled it willingly . . . right into David Rose's backyard.

It might seem strange to the average homeowner to have a locomotive and assorted freight cars in his backyard, but in this case the equipment was miniature. The load was fresh Cal-Turf dichondra sod, and the train, piloted by the famous music composer-conductor, was doing its part to help install a new back lawn at Rose's Sherman Oaks home.

Part of a project by Arklin Landscaping of Saugus, the sod was cut fresh at the Cal-Turf farm and Southern Headquarters in Camarillo, rolled, and shipped by truck to Sherman Oaks. There it was unloaded, placed on the small but sturdy flatcars and delivered "by rail" the rest of the way. The nine-ton load was moved easily behind the powerful engine. In fact, the miniature train proved to be more than just an interesting method of transporting the fresh sod. Because of the dimensions of the house and lot it was virtually the only easy way to get the sod from the front of Rose's home to the backyard.

The "Great Northern" mountain-type locomotive is only one of ten working engines Rose has in his "stable" of miniatures. They range in gauge size from 1½ to 7½ inches, and in scale from ½ inch to-the-foot up to 1½ inch to-the-foot. The smallest engine is only 12 inches long and weighs a scant 15 pounds, but the coal burner is capable of pulling up to three adults over the large layout, which includes more than 1,000 feet of track.

Rose has been involved in miniature railroading for 20 years, but he had to admit that the 3,000 square feet of Cal-Turf dichondra was one of the most unusual loads his "steamers" ever hauled.

Turf-Seed, Inc., Formed By Oregon Specialists

A new company has been formed in Oregon's Willamette Valley by Bill Rose, well-known seed grower and Dick Bailey, specialist in turf grass production. The firm to be known as TURF-SEED, INC. has set up headquarters in Woodburn, Ore., with a mailing address at nearby Hubbard, Ore.

The firm will contract seed production of the turf varieties for special uses such as intensive sports turf areas and high-quality lawn uses. In addition, the new firm plans varietal evaluation from the turf and seed production standpoint. According to Bailey, who will be general manager of the firm, the company will maintain extensive test plots for specialized turf varieties and perform consulting services for seed and turf.

Besides turf and turf seed sales, TURF-SEED, INC., will handle Crownvetch seed and plants as well as consult on the usage of Crownvetch. An unusual, but complimentary portion of the TURF-SEED program will be in the area of product development. One prospective new product now being manufactured and tested by the company is Fertil-mulch, a new concept in seed bed mulching.

Bill Rose, a veteran airforce pilot and a 1951 soils-major graduate of Oregon State University, more than 15 years' experience in specialty seed production.

Dick Bailey, a graduate of the University of Idaho, majored in business and agronomy. Also an airforce veteran, Bailey has been in the seed business for more than 15 years working in seed production, promotion and marketing.

Striped Smut Control Grants Go to Pennsylvania, Oregon

Merion Bluegrass Association has announced two research grants. Oregon State University, which has been doing such excellent work on the problem of stripe smut control, was given a grant of two years for further screening of systemic chemicals by Dr. John Hardison, in development of effective systemic fungicides.

In addition, the Pennsylvania Turfgrass Council received a grant of two years to cover application and management studies on stripe smut materials.

Leading Conservationist Backs Pesticide Use

One of the nation's leading conservationists supported the continued use of all pesticides in a speech at the annual meeting of the National Association of Farm Broadcasters in Washington, D.C.

Dr. Robert White Stevens, chairman and professor of the Bureau of Conservation and Environmental Science, Rutgers University, said, "There can be no progress from the out-of-hand banning of useful, effective and safe agricultural chemicals until there are equally efficient methods to replace them."

"Chemical controls," he continued, "are the only known effective method for depressing such pests as insects, disease, weeds, nematodes, and vermin."

According to Dr. White Stevens the use of pesticides and fertilizers in North America has resulted in the "most munificent, highest quality, cheapest, and safest food supply in man's long history."

Decrying attacks by his conservationist colleagues, he said that the "varied critics of scientific agriculture accept its benefits and munificence while they blithely disrupt and destroy it without any valid suggestions as to how it can be replaced by methods of comparable efficiency and productivity."

He also told the Farm Broadcasters that "the current proposed depression in the use of agricultural chemicals can be defined as the triumph of superstition, prejudice and emotion over science."

"I'm not too fond of the way he sends you long distance."

Sod Heating Damage Cut by Close Mowing

The best way to keep sod from heating and deteriorating during shipment is to cut it at ¾-inch, remove the clippings and keep the shipping temperature under 87 degrees.

A team of Michigan State University researchers concluded that most other attempts to control sod damage—including the use of a chemical respiration inhibitor—were not effective.

Drs. John King, now with the University of Arkansas, and James Beard, MSU turfgrass researcher, reported their findings at the annual meeting of the Amercian Society of Agronomy.

They also noted that sod is less likely to tear when sod growers applied lower rates of nitrogen (150 pounds per acre per year) rather than normal recommended levels (215 pounds per acre per year). Root production was higher for sod produced with below normal nitrogen fertilization, thus the greater sod strength.

the Luxury Grass

Highland Colonial Bent

Just possibly, Highland Colonial Bentgrass is the greatest value in grass seed today. It's one of the most economical of the fine-bladed varieties and has every attribute required for a truly luxurious lawn or turf. With some 8 million seeds per lb., the potential number of plants is great.

Highland can be seeded alone or in mixtures with other fine-bladed grasses, is free of noxious weeds and **Poa Annua,** and will thrive even when close cut to ¼ inch.

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Oregon Highland Colonial Bentgrass Commission
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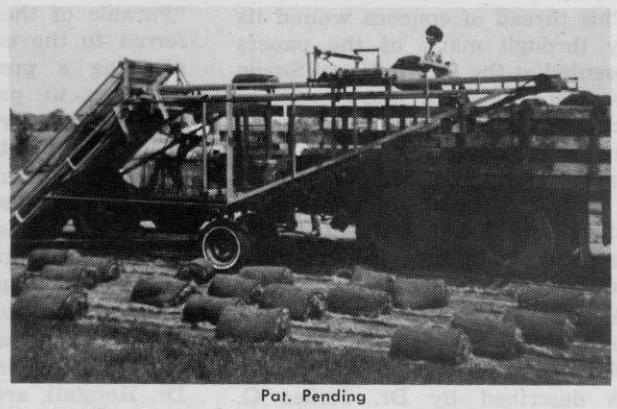
HADFIELD AUTOMATIC PICKUP SOD ROLL LOADER



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1. **Sodloader easily attaches to any sod truck.**
2. **No worker needed on ground when loading.**
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4. **Cross conveyor runs lengthways of loader.**
5. **Loader may be backed rapidly on short rows.**
6. **Why palatize sod when you can slide sod out of any stack dumpbox with small modification, if they are stacked right? Have been doing it for three years. My customers are mostly homeowners.**
7. **8mm movie film on how to modify stack dump box and stack sod, will be sent C.O.D. for $50.00.**

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TREE CARE FACES INCREASING

EVEN THOUGH wide support could be generated for the position that trees are among the world's most important heritages, forces are at work that make preserving that heritage increasingly difficult.

This thread of concern wound its way through many of the papers presented at the International Shade Tree Conference in mid-August at Rochester, N. Y. The 46th gathering drew a record crowd of 851, surpassing the 1965 Washington meeting of 816. Thirty companies exhibited in Hotel Flagship-Rochester and about half demonstrated equipment in Genesee Valley Park.

According to some speakers, we have experienced over-reaction, and a short-sighted reaction to a condition described by Dr. James G. Horsfall as "an environment that's beginning to fight back."

The danger we must avoid as we deal with environmental problems, cautioned Dr. James Afflect, is that "We must not — we cannot let the human population be controlled by the balance of nature."

Parable of the Commons

While Dr. Horsfall's talk was not billed as a summary of the convention, it did serve to wrap up the alternatives that man has in regulating his surroundings to his benefit. Practically all of the papers presented fit into one of four options that Dr. Horsfall suggested.

A plant pathologist, director of the Connecticut Agricultural Experiment Station and chairman of his state's environmental policy committee, Dr. Horsfall likened environmental problems to what he called the "Parable of the Commons." He referred to the early-day practice of allowing a prescribed number of villagers to pasture livestock on village property—"according to the carrying capacity of the commons."

When the carrying capacity of the commons is surpassed, problems will occur. In some areas, he said, there are just too many automobiles and too many people; consequently there is pollution of various sorts.

Options available to deal with the over-capacity of the commons, said Dr. Horsfall, are:

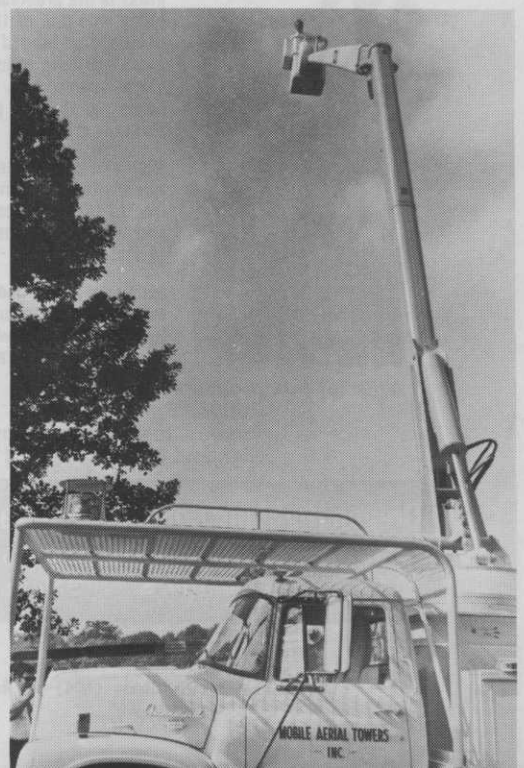
1. Applying science and technology to delay the collapse of the commons, or to increase the carrying capacity;
2. Educating the users of the commons on its proper use;
3. Limiting the use of the commons by legislation;
4. Limiting the users of the commons, or, in present terminology, getting the population in line with the environment.

Dr. Horsfall sees the greatest activity in the first two options, simply because "they do not interfere with our freedoms."

Though man is given dominion over the environment in Genesis, Dr. Horsfall said, our age has become so extraordinarily complex that he no longer can do exactly as he pleases. Those today who seek the destruction of society without offering solutions to its ills "would starve to death before they could put it back together," he added.

Chemical Bans Shortsighted

As an example of the shortsightedness of the new breed of



OBSTACLES

Genesee Valley Park, Rochester, N.Y., appeared to harbor a giant metal octopus the day of field demonstrations for the International Shade Tree Conference in mid-August. Aerial lifts, such as the Skyworker, left, provided the roaming tenacles; and occasionally a whole tree was lifted from the ground, in this case by the big Vermeer tree spade.

ecologists, Dr. James Affleck, general manager of the agricultural division of American Cyanamid Company, cited one result of the DDT ban — forest defoliation by the gypsy moth.

"My home state (New Jersey) has had a 20-fold increase in two years, from 5,000 acres defoliated in 1968 to well over 100,000 this year. According to the USDA, the gypsy moth last year defoliated 260,000 acres of woodland in the U.S., three times the acres destroyed the previous year."

Plant protection experts, he said, point out that a single defoliation has been known to kill white pines, spruce, and hemlock. Two defoliations can kill most hardwoods.

Defoliated forests also increase fire and erosion hazards, adversely affect stream flow, reduce land and recreational values and destroy wildlife habitats.

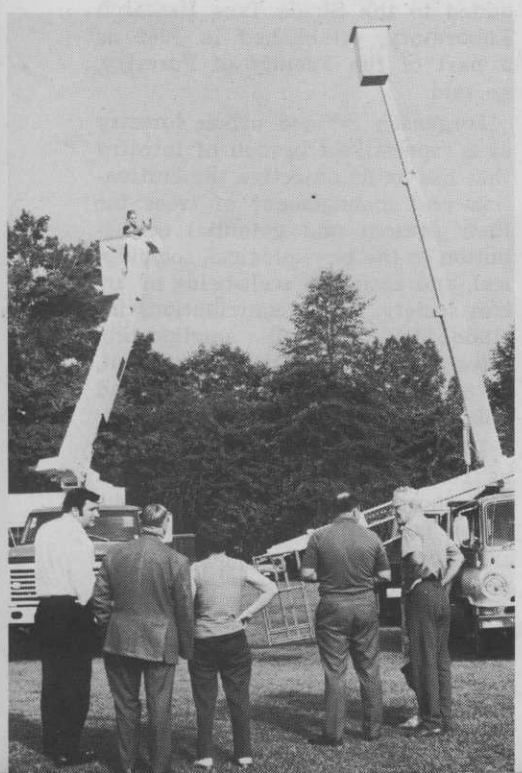
This seemingly missionary zeal to ban broad spectrum pesticides currently in use will lead to more serious disasters, he continued, to include reduced food production and increased famine.

Dr. Affleck stated Cyanamid does not produce or market DDT or any of the other persistent, chlorinated hydrocarbon pesticides currently under fire and expects to profit from their curtailed use. However, he said, "I must warn that we are moving far too rapidly to restrict the use of these products before we have developed others to take their place."

He termed the "balance of nature" a continuing series of catastrophes in which life forms are wiped out by disease or starvation.

Not all our environmental problems are pollution problems, he stated. "If we can be a little patient, we will solve most of our problems in the area of pesticides."

In the meantime, he urged his listeners to stimulate correct use of today's chemicals, to take an active role in the scientific and political arguments in which environmental problems will be measured and solutions devised and accepted; and to speak out against unreasonable, unscientific, or unfounded attacks on the "vital elements of today's life."



Some aerial lifts were old friends to ISTC members, such as the Hi-Ranger from Mobile Aerial Towers. Others were hopefully new friends, one being the VersaLift at near left. Joseph M. Cordero, left, is president of VersaLift Sales Co. Asplundh Chipper Co. and Baker Equipment Co. also demonstrated lifts.

Policy on New Pesticides

Dr. Ernest A. Walker of the pesticide registration division of USDA's Agricultural Research Service, reported on what Secretary of Agriculture Clifford Hardin said his department will be looking for as new pesticides are being registered:

—The period of time and the conditions under which the product will persist in the atmosphere;

—Whether the product is likely to be moved out of the area of use because of solubility and mobility, and what potential effects may be anticipated;

—Whether the product is transformed into other chemicals which might have adverse effects on the

Richard E. Abbott, out-going ISTC president tries a Limb-Lopper under the watchful eye of sales representative Bob Bennett. Below, Francis F. Darrow checks out a Homelite saw to see that everything is working properly.

environment, and on living man, useful vertebrate and invertebrate animals, and on useful vegetation;

—Whether there is a need for the product for essential uses for which there is no alternative available;

Systemic Fungicides for Trees

As with most controversies, there are some positive results emerging from the pesticide-pollution-environment arena. Several papers reflected the spurred research effort across the country, much of it attacking old problems from new directions. In the words of Dr. Horsfall, renewed effort is taking place to delay the collapse of the commons or to increase its carrying capacity, that is, Option No. 1.

Dr. Winand K. Hock reported on systemic fungicides for controlling vascular disease in shade trees, such as Dutch elm disease, oak wilt, verticillium wilt, and mimosa wilt.

"Our approach to control these diseases has always been indirect," said Hock. "We rely heavily upon insecticides to control vectors; sanitation to remove sources of infected wood and to destroy breeding haunts; fumigants to sever root grafts; and fertilization and other cultural practices to offset effects of the disease."

Legislation against insecticides and sanitation costs are forcing us to seek alternatives, he said, including the development of agents that have a decisive impact on the pathogens themselves.

Hock said that although recommendations cannot yet be made nor have products been registered, "finally, we appear to be on the threshold of developing such materials."

At Virginia Polytechnic Institute, Hock reported, symptoms of Dutch Elm disease were retarded in America elms treated with either benomyl or thiabendazola prior to inoculation with *Ceratocystis ulmi*. Benlate is the trademark name of benomyl, owned by DuPont Company, Wilmington, Del.; Mertect is the tradename for thiabendazole, owned by Merck Chemical Company, Rahway, N. J.

Connecticut Agricultural Experiment Station found that benomyl reduced foliar symptoms of *C. ulmi* an average of 89% and that protection lasted 10 weeks, more than enough time to protect the trees throughout their maximum period of susceptibility.

Dr. Hock reported of successes with benomyl also at the Delaware, Ohio, Shade Tree Laboratory, where he is stationed. Elm seedlings, one, two and three years old, were treated twice a week with 200 ml of either a 500ppm or a 1,500ppm active aqueous suspension of benomyl applied as a sand drench. After four applications, each tree was inoculated with spores of *C. ulmi*. Seedlings then received eight additional benomyl treatments. Five days following the final treatment, the seedlings were examined for foliar symptoms and stem sections were cultured to determine the presence of *C. ulmi*. The results:

"Forty-three percent of the untreated plants exhibited symptoms of Dutch Elm disease compared with 1.7% of the treated plants," reported Dr. Hock. "Even more striking was the contrast between treated and untreated trees in attempts to isolate *C. ulmi* from the wood. We were unable to isolate the fungus from any of the 60 treated plants; whereas, we isolated the fungus from 80% of the untreated trees."

Urban Forestry Education

Canada has taken a lead in educating the public concerning the proper development and use of the tree commons. Prof. Erik Jorgensen of the University of Toronto talked about the urban forestry education program that has evolved "since programs of planting trees other than for lumber production began sometime in the 1860s or 70s."

Urban forestry curriculum has been added to the Shade Tree Research Laboratory, established in 1962 as a part of the Faculty of Forestry, he said.

Jorgensen defined urban forestry as a "specialized branch of forestry that has as its objective the cultivation and management of trees for their present and potential contribution to the physiological, sociological, and economic well-being of urban society. These contributions include the over-all ameliorating effect of trees on their environment, as well as their recreational and general amenity value."

In shorter terms, he described it as tree management in an entire area influenced by and utilized by the urban population.

In 1965, Jorgensen said a graduate course in urban forestry was added. Course lectures and seminars, heavy on student participation, focus on:

Chips fly from a Mitts and Merrill chipper, one of three demonstrated. Others were the Asplundh chipper and the Wood/Chuck, made by Safety Test & Equipment Co.

—The interaction between trees and their environment;

—Cultivation and maintenance of trees under different environments;

—Human relationships to the environment and especially to trees.

Urban forestry was first offered as an undergraduate course in 1969, for the first time bringing forestry students and landscape architects together. The value of this academic marriage, Jorgensen said, is that it "opens the eyes of the students to his responsibilities to society as a whole. He learns to understand that the growing of trees is far more than the mere production of wood products."

Among research projects under way, Jorgensen discussed the vegetative reproduction of trees. Work is promising with maples, he said. Several clones have been established and are operated as "living tree shows."

Eventually, tree growers would get cutting material from clonal plantings from commercial nurseries. Disease-resistant varieties of elms might be propagated in this manner, he said. "And we hope to get one or two frost-resistant honey locust from 6,000 seedlings."

Present objectives, Jorgensen said, "are to conserve and propagate the valuable material — in particular, their genes. Later we might use the material for breeding by hybridization."

Concluding, Jorgensen reminded that urban forests are unique in that they are man-made. They lack over-all design and statement of purpose for proper management.

"It is none too early for us to learn to appreciate and manage our urban forests," he said. "It takes 100 years for maple to mature, but it can be destroyed in a few minutes. It cannot be resurrected, for there are no instant mature trees."

Tree-Removal Cost-Sharing

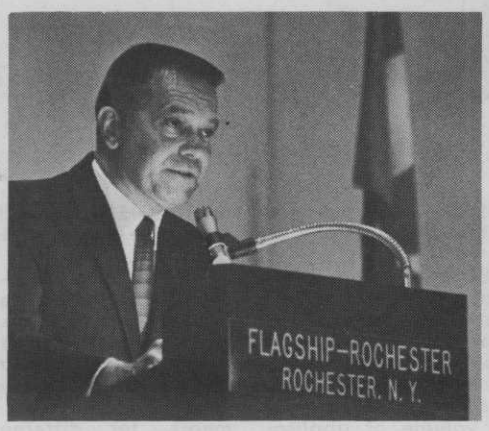
One of the major problems of managing the urban forest, compounded by Dutch Elm disease, is tree removal. Granger Green, operations superintendent, outlined the cost-sharing tree removal program that his company, Rochester Gas and Electric Company, participates in.

With thousands of dead elms and maples in the city and the cost for removing a typical big tree determined to be around $475, a cost-sharing program seemed a necessity, Green said. Since tree removal would benefit the telephone company and homeowners, these groups were approached and accepted the idea. Tree removal costs had been borne entirely by the telephone, gas and electric utilities, Green said, so the largest hurdle was re-educating the public. Television was used, but on-the-spot discussions with homeowners were most successful, he said. About 90% were happy to share the cost, Green added. Monroe Tree Surgeons, Inc., received the contract for actual tree removal. The system works this way:

A Monroe Tree representative contacts the homeowner to obtain written approval for cost-sharing and to estimate the price of removal. Then light and telephone representatives visit the site to determine who benefits most and therefore who pays the bigger percentage of the cost. Usually each utility will share between one-fifth and one-third of the cost, Green said.

"We've been very satisfied," Green said. "A 50% reduction in

(Continued on page 38)



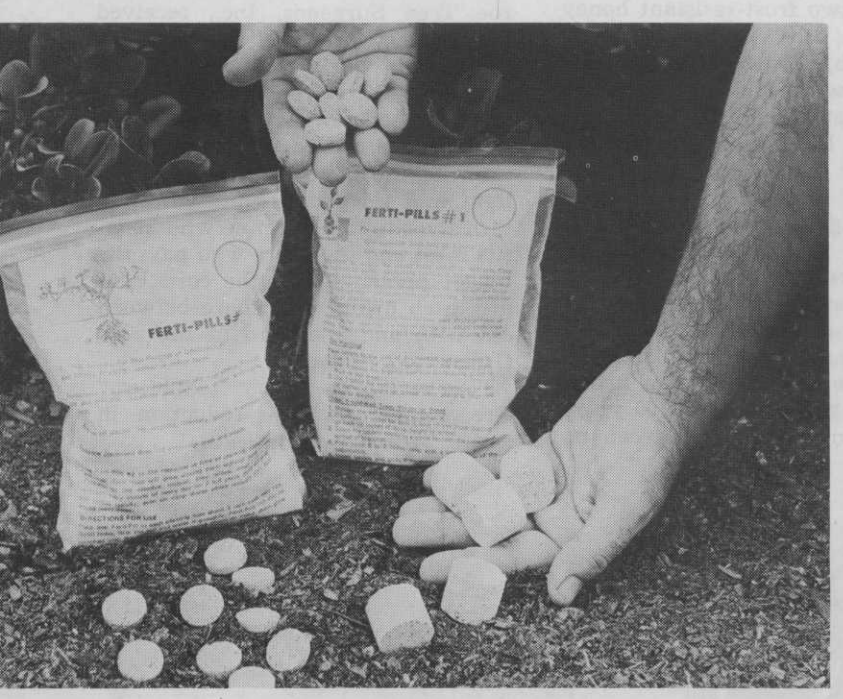
Fred Micha, vice-president of sales, Monroe Tree Surgeons, was general chairman for the 46th ISTC record meeting. Leadership for the coming year is, from the left: John A. Weidhaas, Jr., of Blacksburg, Va., vice-president; Dr. E. B. Himelick of Urbana, Ill., executive director; H. M. Van Wormer of Richmond, Va., president-elect; Richard E. Abbott of Canton, Ohio, immediate past president; J. A. Kimmel of Toronto, Canada, president; Dr. L. C. Chadwick of Columbus, Ohio, executive director emeritus; and E. C. Bundy of Urbana, Ill., executive secretary. Dr. Dan Neely, not pictured, is the new editor of the ISTC newsletter.

SCARIFIER/TRACTOR COMBINATION, Waldon, Inc., Fairview, Okla.

The Waldon Scarifier is designed to work on the three-point hitch for the Waldon 5000 tractor and will work on any category 1, 3-point hitch. The Waldon Scarifier features three heavy-duty shanks and points as standard equipment and more may be added. The frame of the scarifier unit is also available with chisel plow shank and teeth. Excellent for ripping ground or blacktop or many other hard materials. For more details, circle (701) on the reply card.

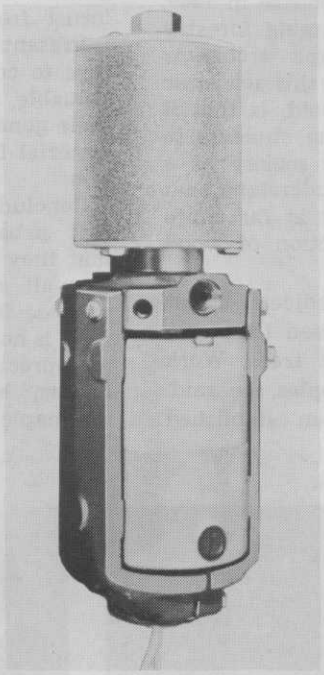
LAKE DYE, C. B. Dolge Co., Westport Conn.

Turn your muddy water hazard and ponds to bright blue or blue green with non-toxic Dolge Lake Dye. It will not harm fish or other wildlife; will help keep down algae. This powder can be stored indefinitely without deteriorating. Put in 2 pounds per acre of water 4 to 5 feet deep. Use more if the pond is deeper—or if you want deeper color. It's long-lasting, keeping a pond attractively colored for several months, if there is no outlet. For more details, circle (702) on the reply card.



FERTI-PILLS, Butler's Mill, Inc., San Diego, Calif.

Ferti-pills have range of uses from window-box gardeners to orchard developers. The tablets are designed to break down slowly, over a two-year period, providing both major and minor nutrients to the root zone. In its new form, it has produced immediate acceptance from homeowners and gardeners. The tablet form was originally developed by Agriform International Chemicals, Inc., 13 years ago for landscapers, nurseries, and other commercial gardeners. For more details, circle (705) on the reply card.



SPRAY HEAD, Beeco Products Co., Fort Washington, Pa.

BEECOMIST spray head offers precise control of droplet size from 2 to 60 microns for low-volume or ultra low-volume application. A metal sleeve driven at high speed by electric motor determines droplet size and volume of application. Unit is suitable for air-blast sprayers and fixed-wing aircraft and helicopters. For more details, circle (706) on the reply card.

SOIL MOISTURE METER, Agtronics Mfg. Co., Barstow, Calif.

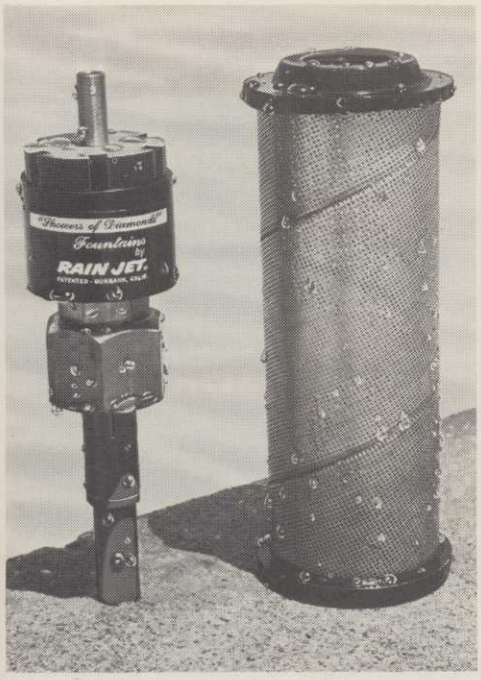
Insert Agtronics probe. Moisture content registers instantly. Reading of 5 is saturation; 0 is bone dry. A chart on the back of unit translates meter reading to action requirements, for different plant groups. Unit can be calibrated in the field, but comes ready to use, equipped with a regular AA battery. All metal construction. For more details, circle (707) on the reply card.

SPRAYER, L. L. Larson Machine, Inc., Princeville, Ill.

New Model HP-305 All-Purpose, High-Pressure Sprayer is built on heavy-duty tubular frame chassis trailer with 11:00x15" high-flotation tires. 300-gal. epoxy-coated tank has sight gauge and features 12x15-inch top opening. Tank is skid-mounted for use on trailer unit or in pickup truck. Pumping unit powered by 7-hp Kohler engine with 10 gpm pump for pressures up to 400 lbs. Mechanical or jet agitation. For more details, circle (703) on the reply card.

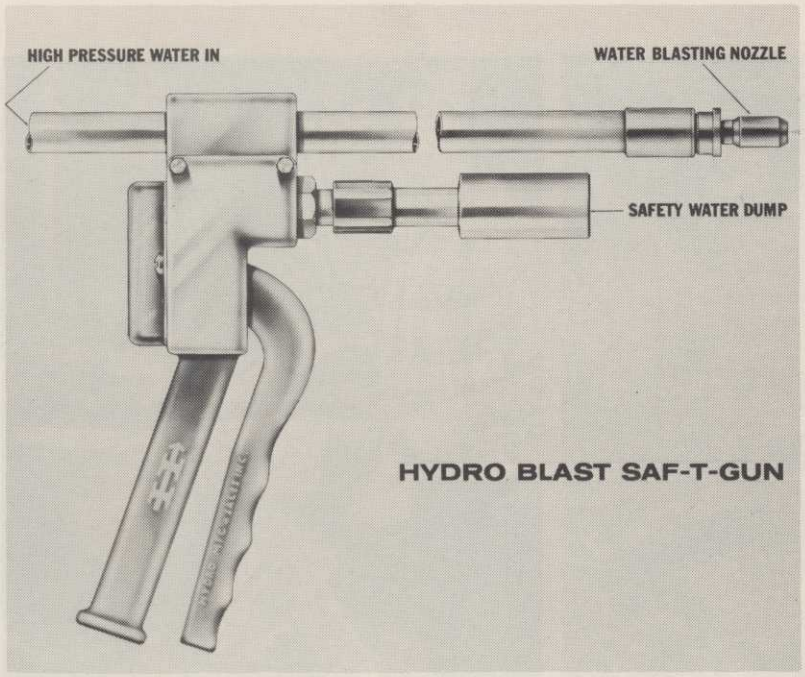
BEMAS BROADCASTER, The Service Group, Oakville, Ontario

Norwegian-built Bemas broadcaster is a compact, lightweight, fully adjustable spreader for all types of fertilizer. The two models available are tractor-mounted, 3-point hitch. Model 400 (pictured) has 900-lb. capacity with 65-pound material. Weighs 165 lbs. Model 210 has 500-lb capacity; weighs 120 lbs. Extension ring for Model 210 increases hopper capacity to 850 lbs. For more details, circle (704) on the reply card.



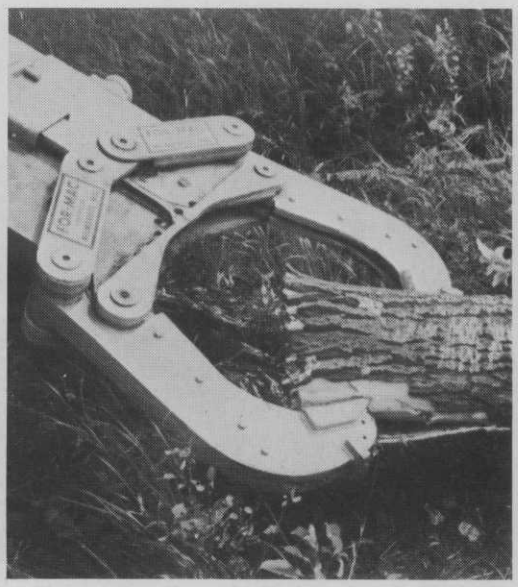
FOUNTAIN HEADS, Rain Jet Corporation, Burbank, Calif.

Eight new Fountain Head Junior Jet Sets have been announced. They consist of head and pump strainer, with installation instructions. Purchaser provides his own recirculating pump and pool for this do-it-yourself system. Five in the Group A set are ¾" diameter and rise 6 feet; others are ½" and rise to 3 feet. A free, 4-page catalog and price list is available. For more details, circle (708) on the reply card.



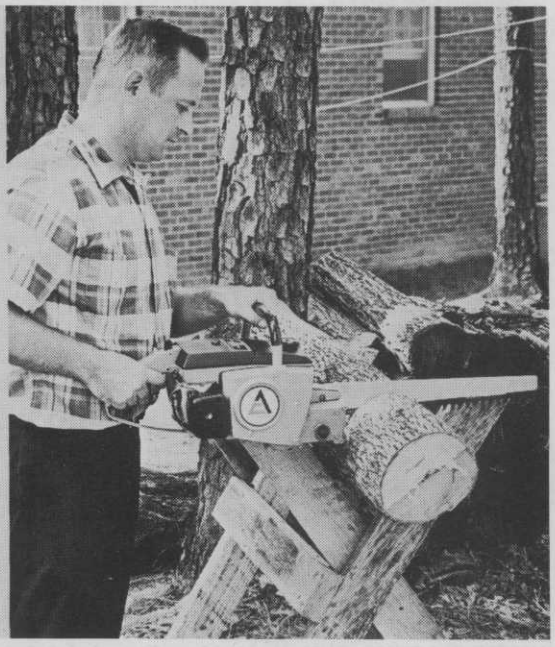
WATER BLASTING GUN, Hydro Manufacturing & Sales, Inc., Missouri City, Tex.

This new pistol grip gun for water blasting is capable of handling water pressures up to 10,000 psi and delivering up to 60 gpm. Hydro blasting is effective method for removing rust, scale, oil stains, grease, slime, algae, tar, fat, loose paint, acid, sludge, concrete splatter, slag, marine encrustations, and weather stains. It has proved more economical than other methods of cleaning heat exchanger tube bundles, tanks, towers, reactors, tractors and heavy equipment. A unique feature is an exclusive 224 to 1 compound cam action valve-closing leverage that gives the unit an extremely light trigger pull. The gun shuts off a split second after trigger release. Safer and more accurate. For more details, circle (709) on the reply card.



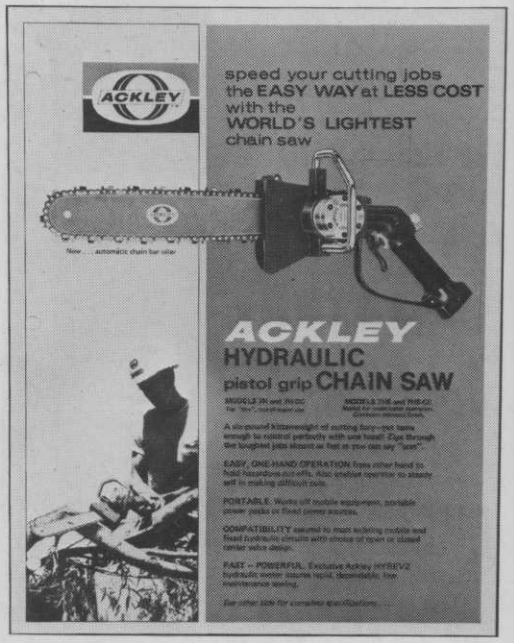
BUNCHING-SHEAR, For-Mac Corporation, Milwaukee, Wis.

The Bunching-Shear tractor attachment is designed to fell and skid whole trees into bunches, or turns, before limbing, topping or bucking. Pictures from the left show guillotine blade in position; immediately after cut—note low stump height and small amount of fibre damage; and jaws pinching tree for skidding. Shear capacity, 20" diameter (15" hardwood); felling time, 5-6 seconds with 40 gpm pump; operating pressure, relief valve set at 1,850 psi; rotating arc, 143 degrees over-all; felling height, maximum 48 inches and minimum 4 inches; weight, 2,000 lbs.; length, 84 inches; blade thickness, ⅝-inch; 3-point hitch. Typical team is a three-man crew—an operator on the tractor and two men on the ground with chain saws. For more details, circle (710) on the reply card.



CHAIN SAWS, Allis-Chalmers, Milwaukee, Wis.

Three new chain saws and a blade saw have been added to the Allis-Chalmers line of outdoor power equipment. Chain saws include model 95, capable of felling and bucking trees up to 34 in. diameter; Model 195 (pictured left), with automatic and manual oiling systems and Model 295 with push-button sharpener. Model 85 blade saw (pictured right) is gear driven. A 17 in. bar and chain and blade are standard. The saws have ball and needle bearings to reduce friction and wear and extend saw life; and 3.6 cu in. displacement air-cooled, two-cycle gasoline engines. Magnesium die cast housings. Automatic rewind and oversize pulleys to provide easier starting. Baffled spark arresting muffler. Optional equipment—12 to 25 in. bars, 13 and 14 in. bows, and 16 to 24 in. roller nose bars. For more details, circle (713) on the reply card.

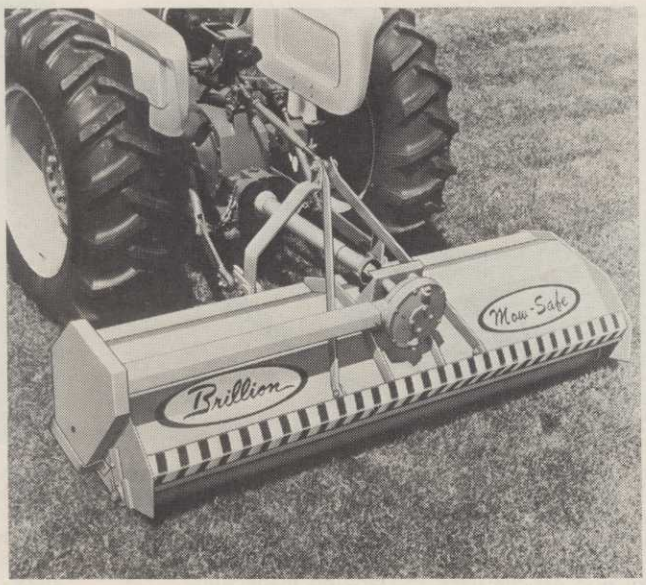


HYDRAULIC-POWERED CHAIN SAWS, Ackley Manufacturing Co., Clackamas, Ore.

These light, easy to handle saws operate on readily available power sources of either open or closed center types. Sales brochure above lists chain length options, chain speed data, required hydraulic gpm and pressure and other buying decision details. Accessories, such as a fibreglass holster for handy carry and storage, are described. For more details and copy of brochure, circle (714) on the reply card.

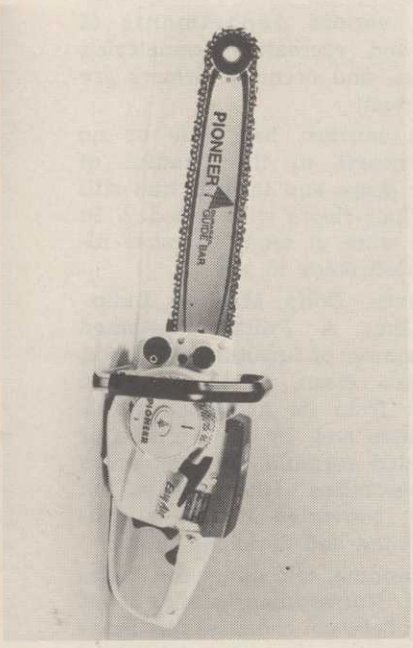
LOADER, International Harvester Co., Chicago, Ill.

The 1050 Series A Loader is designed for the IH Cub 154 Lo-Boy tractor. The new tractor/loader combination will handle light and medium duty loading for landscape contractors, nurseries, greenhouses, truck gardeners, and many others. The double-boom loader will hydraulically lift up to 550 lbs. to a full height of 7 ft. 10 in. Loader hydraulics are supplied by a separate 7.6 gpm hydraulic pump driven from the tractor pto. For more details, circle (711) on the reply card.



FLAIL MOWER, Brillion Iron Works, Inc., Brillion, Wis.

Mow-Safe, an 88" three-point pickup flail mower, is for cutting grass and weeds in large maintained turf areas. The new MS-880 is said to be the safest mower made for working in parks, rights-of-way, golf courses, and other institutional mowing projects. It is designed for precision mowing, without scalping or windrowing, at adjustable heights from ¾" to 3". The MS-880 is said to be the only mower with factory-balanced rotor-blade assemblies, minimizing blade wear and damage to shroud and other components. For more details, circle (712) on the reply card.

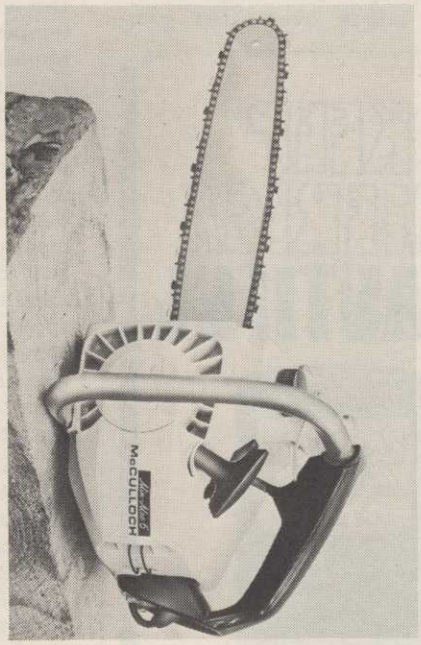


CHAIN SAW, Pioneer Saws, Ltd., Peterborough, Ontario

Two features in the 2071 make it ideal for general use: the exclusive "Easy-Arc" starting, a decompression system that requires only a gentle pull to start it; and a semi-automatic chain tensioner that helps to properly adjust the chain. Other features include automatic chain oiling, a .298" fine pitch Sureguard saw chain, replaceable roller nose, longer and narrower 16" guide bar, and spark-arresting low tone muffler. Weight is 9½ pounds. For more details, circle (715) on the reply card.

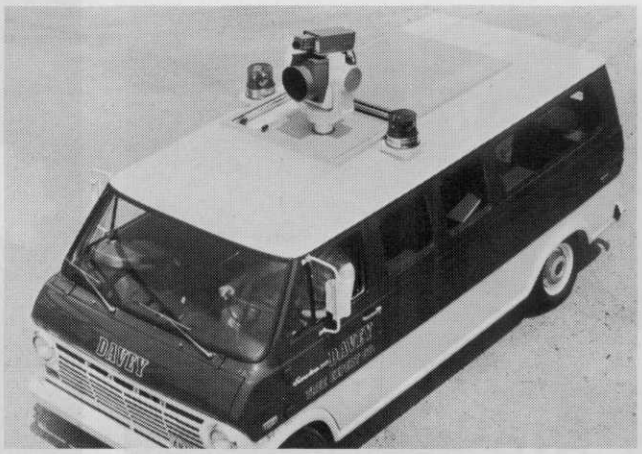
CHAIN SAW, Orline Products, Los Angeles, Calif.

The new Mustang 14" saw weighs 10 lbs. and features automatic oiling, conveniently located on-off switch. Improved handle design has been strengthened for additional hours of rugged use. It has a new, spark-arresting over-size muffler. Powered by new O&R gear-driven engine, a 2-cycle 1.3 C.I.D. unit. Starter component can be repaired or replaced without removing the blower housing. For more details, circle (716) on the reply card.

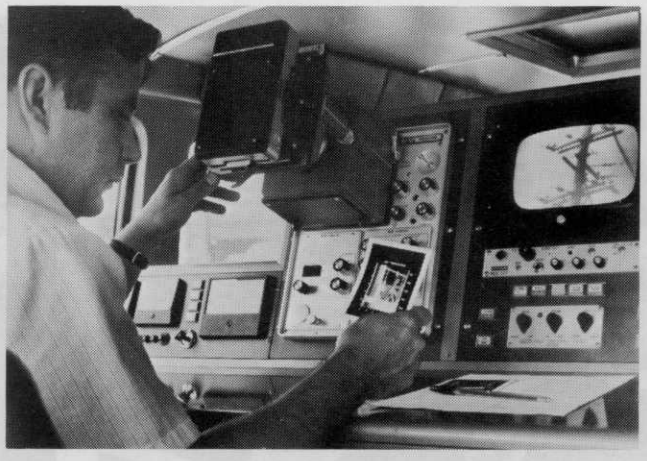


CHAIN SAW, McCulloch Corporation, Los Angeles, Calif.

Called the world's lightest chain saw, the Mini-Mac 6 weighs 6½ pounds plus cutting attachment. Dimensions of power unit are 7¾"Hx8½"Lx7½"W. Has 12" bar and chain. A companion model, the Mini-Mac 6A offers automatic chain oiling and longer 14-inch bar and chain. Both have 30 cc two-cycle engine. Safety is served by the Master Grip handle that provides for control of the saw over its center of gravity. For more details, circle (717) on the reply card.



New Davey fault detection van is quickly positioned to allow automatic scanner to cover all components. An AGA Thermovision infrared camera and high resolution TV camera are mounted on a pedestal that raises the sensor gimbal through the vehicle roof and provides a weathertight interlock. The van also can be used for moving inspection.



When potential trouble is detected, the operator stops the automatic scanning and measures the temperature. Variations from ambient temperature are recorded and a photograph (above) is made of the IR display to record the position of the problem component. TV view screen supplements poor resolution capabilities of the thermovision camera.

Davey Tree Announces Fault Detection Service

Davey Tree Expert Company, Kent, Ohio, has entered the remote fault detection field with a new infrared inspection van.

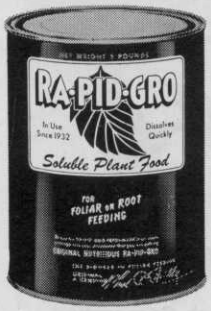
Project coordinator Martin L. Davey, Jr., says, "The ability to detect and isolate overheated components before a serious outage occurs is a significant advancement in power transmission and distribution preventive maintenance, but improvements in inspection techniques were needed. We think our unit has eliminated many former problems."

Infrared inspection of power transmission and distribution facilities is a recent application in remote temperature measurement techniques. An infrared camera is used to generate at TV type image corresponding to the thermal patterns in a viewed scene. Components of higher temperature appear bright while cooler ones remain dark. The thermal image is displayed on a monitor in the van for interpretation by the operator. Temperature measurements of detected bright spots are made with the infrared camera system and recorded. Photographs of the thermal image are then taken to record the location of the problem component.

Paul D. Zidek, who designed the mobile unit for Davey, reports that previous experience with infrared cameras used for fault detection revealed several operational difficulties. Problems of utilization under adverse weather conditions, difficulty of coordination between scanner and display operator, unnecessary setup and take-down times, false indications from sun reflections, and difficulty in locating the fault, all reduced the efficiency of the technique. Outstanding features of the new Davey unit are programmed scanning, closed circuit TV viewing, and its weather tight features.

The mobile inspection van is completely self-contained, requires no external power tie-ins, and can provide moving inspection of lines.

KEEP AMERICA BEAUTIFUL



"The Pioneer in Foliar Feeding"

Honored by American Horticultural Council "for demonstrating in a practical way that plants could be fertilized through their leaves; for being the first to develop and market an effective plant food for foliar feeding; and for opening the way to a new cultural practice in horticulture."

RA-PID-GRO

Furniture Firm Turns Sawdust into Sawbucks

One company, with the help of biological science, has solved a knotty problem and turned a former waste product into the talk of the agronomy and horticultural fields.

The accolades from Purdue University, various departments of parks and recreation, cemeteries, nurseries, and orchard farmers are for sawdust!

Fresh sawdust has little or no value except to the handful of butcher shops and taverns that still adorn their floors with it today. In its raw state, it tends to cause nitrogen deficiency in soil.

However, Dolly Madison Industries, Inc., a Philadelphia-based manufacturer of furniture and foods, has taken clean, fresh, weed-free sawdust from its hardwood furniture plants and, by the addition of a patented formula of fungivorous micro-organisms (they thrive on fungus), converted it into a soil-conditioning and enriching mulch.

The product, sold under the tradename of "Nurseryman," stands about midway between chemical fertilizers and peat moss as a soil conditioner.

Nurseryman mulch has a uniform texture — almost granular — and pours or may even be applied with a spreader. It is fully activated and does not rely on circumstances of soil to begin decomposition.

The mulch makes a perfect top dressing, too. It is less prone to blowing about than peat. It does not crust over when wet and it is not a fire hazard when dry.

For additional information, circle (718) on the reply card.

Pen a Note for Chlordane, Heptachlor

Those who feel chlordane and heptachlor are needed for control of soil insects in turf should write to the U.S. Department of Agriculture, said Robert R. Garrison, president, Velsicol Chemical Corporation, manufacturer of the two insecticides.

"Otherwise, officials who regulate pesticides may assume these label registrations are no longer important and may cancel them," Garrison warned.

U.S.D.A. has requested comments and opinions regarding chlordane and heptachlor in the Federal Register on July 31, "in order to determine if certain uses are essential and if there are no effective and safe substitutes." Information concerning these insecticides, especially the insects controlled and the damage or injury expected without their use, should be sent before Oct. 29 to: Director, Pesticides Regulations Division, Agricultural Research Service, U.S. Department of Agriculture, Washington, D. C. 20250.

There still is a need for the use of chlorinated hydrocarbons for control of soil insects, Garrison commented, especially for those insects, such as grubs and wireworms, which have long life cycles.

Garrison said the concept that a pesticide be used only if the use is considered to be essential and if there is no effective and safe substitute will practically stop the future development of new pesticides.

"This concept provides no objective standard upon which regulations can be based," he said. "A chemical company cannot commit millions of dollars in research and development for a new pesticide if the market is temporary — that is, if the new pesticide is to be used only until another new pesticide is judged to be more effective and safer for a particular use. A company would never know for sure what factors would determine a compound being removed from the marketplace."

Arkansas Survey Sizes Up Alligatorweed

Alligatorweed infestations in Arkansas are not as severe as thought.

That's the conclusion of a survey taken recently by the Arkansas State Plant Board, Army Corps of Engineers and Extension Service personnel. The Corps covered major waterways and impounded waters by boat and airplane. County agents covered their areas.

Melvin C. Tucker, director of the division of plant industry, summarized the findings:

"Results were encouraging because alligatorweed was not found as widespread as anticipated. It is plentiful in bayous and canals in southwest Arkansas County where first discovered in the state. It also is in the Arkansas River in this vicinity. The mouth of Mill Bayou for some distance is completely choked and the Bayou Meto infestation is increasing rapidly.

"Bayou Bartholomew was found to be infested at Pine Bluff and for a few miles south of there. Swan Lake in that area is very heavily infested. The Arkansas River infestation, although light at present, poses a threat not only to river traffic and recreation but to agriculture in the entire Arkansas River Valley. This threat is made more serious by the loss of 2,4,5-T, and probably Silvex in time, to the anti-pesticiders.

"Other than the above serious problems, alligatorweed was found in lesser amounts in ornamental plantings in Blytheville and Little Rock. These infestations were probably in with nursery stock from the Mobile, Ala., area. A small farm pond was found infested south of El Dorado. The pond owner immediately stocked it with geese and they have reduced the weed population considerably this summer. The owner believes the geese will eliminate the alligatorweed in another year or so."

Village Blacksmith Expands

Village Blacksmith® Division of McGraw-Edison Company, Watertown, Wis., has assumed all operations of Northern Industries, Inc., Milwaukee.

The Blitz Fog® line of propane foggers was a pioneer in the pest control industry. Village Blacksmith® has for more than seven decades been known for lawn and garden products and outdoor equipment.

The combination of these two lines broadens the scope of outdoor products marketed under the Village Blacksmith® name.

The one way to enjoy effective control of broadleaved weeds and brush *plus* the benefits of resistance to drift, washoff and evaporation, no pre-mixing, and less refilling *plus* the assurance of quality backed by our name just has to be worth the price . . . less than you might expect. Visko-Rhap,* the ONE way.

*Trademark of Hercules Incorporated

Available in low volatile and oil soluble amine formulations of 2,4-D, 2,4,5-T and Silvex from Agricultural Chemicals, Hercules Incorporated, Wilmington, Delaware 19899.

HERCULES

SP 70-5

For More Details Circle (117) on Reply Card

Consulting Arborists Name Davis Executive Director

A full-time executive director has been named for the American Society of Consulting Arborists.

He is Dr. Spencer H. Davis, Jr., plant pathologist at Rutgers University, New Brunswick, N.J. Davis succeeds Martha Jones, who had been acting on an interim basis.

Communications concerning ASCA activities should be directed to Davis. His address is: 12 Lakeview Ave., Milltown, N.J. 08850.

In announcing the executive director, ASCA president Ray Gustin, Jr., expressed the belief that Davis' experience with and knowledge of trees should provide valuable assistance to ASCA.

The consulting arborist association was formed three years ago by eight old-time tree men, said Gustin. ASCA now has more than 60 members in the U.S. and Canada, he added.

"What makes ASCA just a little bit different from the thousands of trade associations, and new ones being formed every day," noted Gustin, "is that its formation crystalized a new profession. An arboricultural consulting service fills a long needed service and it has added prestige to the arborist profession."

Leadership for the American Society of Consulting Arborists: From the left, President Ray Gustin, Jr., Gustin Gardens, Gaithersburg, Md.; Executive Director Dr. Spencer Davis, Rutgers University; and President-elect George W. Goodall, Goodall Tree Expert Co., Portland, Me.

insect report

TURF INSECTS

A MEALYBUG
(Phenacoccus eriogoni)

CALIFORNIA: Counts of 20 per stem on weeds in Elk Creek, Glenn County. This is a new county record.

OYSTERSHELL SCALE
(Lepidosaphes ulmi)

CALIFORNIA: Averaged 1,000 per limb on bitterbrush *(Purshia tridentata)* on scattered plants along Highway 99 north of Mt. Shasta.

SOD WEBWORMS
(Crambus spp.)

COLORADO: *C. mutabilis* larvae, 3-4 square yard, caused severe damage to lawns in Fort Collins area, Larimer County. ARIZONA: Treated 60 acres of Tifgreen Bermudagrass for *Crambus* sp. at Tolleson, Maricopa County.

INSECTS OF ORNAMENTALS

ASPEN BLOTCH MINER
(Lithocolletis tremuloidiella)

MONTANA: Defoliated ornmental populars at various locations over state.

AN ERIOPHYID MITE
(Trisetacus juniperinus)

WASHINGTON: Severely stunting and destroying buds and new growth of *Juniperus procumbens*. About 80% of buds infested at Tumwater, Thurston county.

TWO-SPOTTED SPIDER MITE
(Tetranychus urticae)

FLORIDA: All stages moderate on 1,000 dieffenbachia plants at Perrine, Dade county. Control not effective.

TREE INSECTS

ELM LEAF BEETLE
(Pyrrhalta luteola)

ALABAMA: Damage to lawn and street elms heavier than during last 2-3 years in central to north areas. Serious damage caused almost complete defoliation in Demopolis and Thomaston area of Marengo county. MISSISSIPPI: Larvae and adults caused heavy damage to Chinese elms in Oktibbeha, Lowndes, and Calhoun counties. NEW MEXICO: Heavy and skeletonized elms at Lincoln. Lincoln county, and at Tularosa, Otero county. Many damaged leaves fallen. TEXAS: Damaging Chinese elms in Wilbarger; Wichita, Lubbock, Hockley, Bailey, Winkler, Midland, Martin, Glasscock, Ector, Pecos, Upton, Ward, Reagan, and El Paso counties. UTAH: Still damaging in many localities; very severe at Moab, Grand county, and some San Juan county communities.

FOREST TENT CATERPILLAR
(Malacosoma disstria)

KENTUCKY: Epidemic populations caused defoliation of 1,200-acre area in Hopkins, McLean, Mecklenberg, and Ohio counties. ALABAMA: Defoliated total of 45,820 acres of water tupelo in the Mobile and Tensaw river basins in southwestern area; about 24,360 acres classed as heavy defoliation. LOUISIANA: Infestations reached heaviest level since 1963 in southeastern area, total of 447,000 acres of water tupelo forest damaged. Infestation declined from 10,000 acres in 1969 to 2,500 acres in Mermentau river basin.

SADDLED PROMINENT
(Heterocampa guttivitta)

MAINE: This pest and associated species severe with up to 100% defoliation on about 12,000 acres of beech, sugar maple, birch, and other hardwoods in Oxford county. Pupation complete. MASSACHUSETTS: Larvae of this species and *Anisota rubicunda* (green-striped mapleworm) heavy on maple, with defoliation estimated to be 75-95% in some areas of Franklin county.

Hydrilla Seen As Florida's New No. 1 Pest

In the next ten years hydrilla will replace water hyacinths as Florida's number one water weed problem, a U.S. Department of Agriculture botanist predicts.

Robert D. Blackburn, the botanist who heads research on aquatic vegetation at the University of Florida's agricultural experiment station at Fort Lauderdale, Plantation Field Laboratory, sees hydrilla as the greatest potential threat to Florida's waterways.

Hydrilla is a submersed water plant that grows rooted to the bottom and has long, branching stems.

Even if above-soil portions of the plant are completely removed by mechanical or herbicidal methods, the area will be rapidly reinfested from small propagules and rootstock nodes. Hydrilla plants produce stem tubers that are a means of propagation. Also, broken shoots will develop into new plants.

"Hydrilla was introduced in Floida in 1960, in a small canal in Miami and in an area near Crystal River," Blackburn said. "Now 70,000 acres of Florida waterways are covered with hydrilla."

Blackburn explained that hydrilla was first brought to Florida by aquarium dealers. "Northern dealers would plant exotic plants in Florida springs and streams to harvest later and sell in the aquarium trade," Blackburn said.

The last Legislature passed a law to restrict importation of exotic aquatic plants and prohibit their planting in state waters. However, though there is a penalty of a $1,000 fine for violating the law, there are no special means for enforcing it.

Hydrilla is found in canals, ditches, pools, lakes, marshes, slow-flowing streams, rivers and tidal water areas. It will grow in water six to seven meters deep and can produce very dense mats of vegetation.

"Hydrilla already has become a real problem in Florida," Blackburn said. "Some of the Winter Park-Orlando area recreational lakes have been closed because of it."

Hydrilla stops water flow in canals and streams, impedes boating, fishing and swimming, interferes with fish production, and may create a health problem.

Blackburn said that in Orlando area lake drownings have occurred when people have fallen from boats into the water and were trapped under the thick mat of hydrilla. "Hydrilla grows so thick in some areas," Blackburn said, "that birds and small animals can walk over the top of it."

Research in Orlando associated encephalitis with the plant, though this has not been extensively confirmed. It is known that leaf spines on hydrilla cause rash on contact and that the rash can become infected.

Tote Herbicide Announced By C. B. Dolge Company

C. B. Dolge Company, Westport, Conn., has announced a new system-type of herbicide called Tote.

The weed killer acts on all perennial, biennial and annual growths, and also sterilizes the soil, doing the job for one entire season and well into the next, say company technicians.

Working through the roots, Tote has an exceptionally high LD_{50} rating, the standard of toxicology measurement, that is well above other total-kill weed products now on the market, a company release stated. Besides its formulated active ingredients, Tote also contains an extender that has herbicidal effect for extra over-all total growth kill power.

One gallon of Tote in 15 gallons of water will treat 1,000 sq. ft. Even on dry ground, it is not wasted even if there is initial failure to penetrate to the roots, said the release, because a subsequent rain will put it to work.

Experience proves Tote gives at least 50% savings in labor, the release continued, and requires only 60 gallons of water per acre, compared with the 1,460 gallons required when applying sodium arsenite products. For details, circle (718) on the reply card.

Buys Weather Guard Chest

Knaack Mfg. Co., Crystal Lake, Ill., has purchased Weather Guard Chest, St. Louis, Mo., manufacturer of tool and storage chests and accessories for pickup trucks. Knaak manufactures general-use steel tool and storage chests and accessories for contractors and industry.

0217®

RAH! RAH! RAH!

Cheers can be heard all over the north temperate zones of the world for this giant among lawn seeds. Outstanding on all counts, Fylking Kentucky bluegrass is resistant to a wide range of diseases, including leafspot and stripe smut. Drought and winter tough, fine leaves of deepest emerald green grow in unusual density due to abundant sideshoots. Fylking produces no ugly seedheads, can be cut low as ½ inch for home putting greens, ¾ inch for velvety carpet-like lawn. All facts proven in 12 years of international testing by noted authorities. Next lawn, seed or sod with 0217® Fylking Kentucky bluegrass (U.S. Plant Patent 2887). At your seed distributor. Write Jacklin Seed Co., Dishman, WA 99213 for information.

0217 BRAND

FYLKING KENTUCKY BLUEGRASS

For More Details Circle (112) on Reply Card

trimmings

LAST ISSUE, we chose a poem from the International Shade Tree competition that was appropriate to the editorial subject. Following is the poem that judges selected as the grand winner:

When I climb trees,
The silly old bees
Sting my fannyoo-e.

When the wind blows,
My foot gets stuck.
How do I get out of this
Silly old rut?

But the sting of a bee
Helps me!
Out I fly from the
Beautiful tree.

Down, down, down.
Good grief!
Crunch in the leaves,
What a relief!

The author is Steve Coffin, fifth grader at Wayne Central School in Ontario, N.Y.

* * *

FRED K. BUSCHER, Ohio Extension horticulturist, reports that Agricultural Research Service personnel at Beltsville, Md., have confirmed a new way to control slugs. They found from a four-day test that stale or fresh beer placed in a shallow pan caught more than 300 slugs, compared with only 28 caught with the standard slug bait containing bran, an arsenical, and an attractant called metaldehyde. Researchers, performing autopsies on the dead slugs, revealed their stomachs "loaded" with beer.

* * *

THE 10,000TH GOLF COURSE opened for play July 31. According to the National Golf Foundation, the nation's source for golf information, the honor goes to Rancho Canada (East Course) Golf Course in Carmel Valley, California. Owned by professional Nick Lombardo, the course has a 6,600-yard, par 72 track. Robert Putman was the architect.

* * *

ONE ACRE OF GRASS — about half of the front lawns in a block, says Dr. H. John Carew of Michigan State University, has the cooling effect of a 70-ton air-conditioner. "The cooling effect is caused by a loss of water from the grass," he explained. "On a single summer day, an acre of grass will lose about 2,400 gallons of water through transpiration and evaporation."

Tree Care Faces Increasing Obstacles . . .

(Continued from page 29)

costs for removal of dead elm and maple trees has been realized from this program."

Time Study of Tree Trim Costs

An extensive time study of tree trimming by West Penn Power Company has shown that: three-man crews were most productive; that a round-over clipped trim took 3.6 times longer than a natural-look trim; that production can vary widely from time to time between contractors and even crews; that exact specifications for work and periodic supervision can increase production.

J. Frank Wagner, forester for West Penn Power, said that of 244 timed tree trimming observations, the mean trimming time was 84 man-minutes, with a standard error of plus or minus 6%.

Part of instructions to contractors suggest that they approach each tree in a way to reduce its height with no more than 12 cuts that are staggered throughout the tree and shaded by other limb structures.

As an aid to goal attainment, the instructions state, use and stress the use by trimming crews of the following thought process:

1. Look at the conductors;
2. Look at the conductor interference;
3. Trace the conductor interference (the limb) back, on a priority basis, to a natural union with another limb;
4. Remove the conductor interference at the most desirable union;
5. Assure the best possible shape.

"Contractors engaged in firm bidding specific vegetation control jobs cannot afford to be without in-depth information about their operation," said Wagner. "Organizations employing vegetation control services cannot afford to ignore in-depth auditing of time and materials-type contracts. Such organizations should also attempt to describe tree-trimming work, as variable as we know it is, so that firm prices could be received for its satisfactory completion.

"However, since West Penn Power is concerned with community relations and beautification, the quality of work will definitely be evaluated."

Election and Awards

As could be expected, New York provided the biggest state contingent for the record crowd, sending 196. Ohio was second with 99. Other leading states were Michigan, 59; Pennsylvania, 56; Illinois, 33; New Jersey, 32; and California, 26. Canada sent 54, Great Britain, 4; and the Netherlands, 2.

Next year's meeting will be Aug. 8 to 13 in Montreal. Convention cities suggested for 1976 and 1977 included Oklahoma City, Milwaukee, Memphis, Des Moines, Toronto, Philadelphia and St. Louis.

John A. Weidhaas, entomologist from Virginia Polytechnic Institute, Blacksburg, was elected vice-president. J. A. Kimmel, director of parks for Toronto, assumed the presidency. Noel B. Wysong of Golconda, Ill., retired as editor. He is succeeded by Dr. Dan Neely, with the Illinois Natural History Survey, Urbana.

These awards were announced: Award of Merit—President Richard M. Nixon and Edward P. Cliff, Washington, D. C.; Dr. John C. Swartley, Ambler, Pa. Authors Citation — Edward H. Scanlon, Olmsted Falls, Ohio; Dr. Albert E. Dimond, New Haven, Conn.; and Prof. Erik Jorgensen, Toronto, Ontario. Honorary Membership — Leslie Hebert, South Weymouth, Mass. Honorary Life Membership— Frank E. Karpick, Buffalo, N. Y., Orville W. Spicer, Darien, Conn.; Frank Hanbury, Peoria, Ill.; S. W. Parmenter, Kent, Ohio; George Hood, Jr., Palo Alto, Calif.; J. T. Turner, Atlanta, Ga.; and Richard E. Abbott, Canton, Ohio.

K. Dillinger, left, is describing the features of the Baker Equipment Co. aerial lift to Dean Schelle of Avon, N.Y.

classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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WANTED used mist blower suitable for spraying elm trees. Condition not important. State condition; price, etc. Dart Tree Farm, Middle Haddam, Conn. 06456.

BEACHES Expert Lawn Spraying, Aerating. Over $6000 in equipment priced right. Doctors orders, cash required. 477 Sailfish Dr., Atlantic Beach, Fla. 32233.

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EXPANDING Tree Service Company in Northeast—looking for aggressive and experienced salesmen to develop new territories and build up existing ones. Starting pay of $10-15,000 commensurate with education, experience, and ability. Commission also paid on profits earned. Company car furnished; pension plan; paid hospitalization; excellent future. Send resume (with current annual sales and earnings) to: (Box 60, Weeds, Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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FORESTER-LANDSCAPER, B.S. and M.S. degrees in major field-forestry, minor in plant industries. Experienced in landscape design, layout and planting. Research completed in the area of tree improvement. Work experience in Greenhouse and nursery. For resume write Ken Celmer, Research Assistant, Southern Illinois University, Department of Forestry, Carbondale, Illinois 62901.

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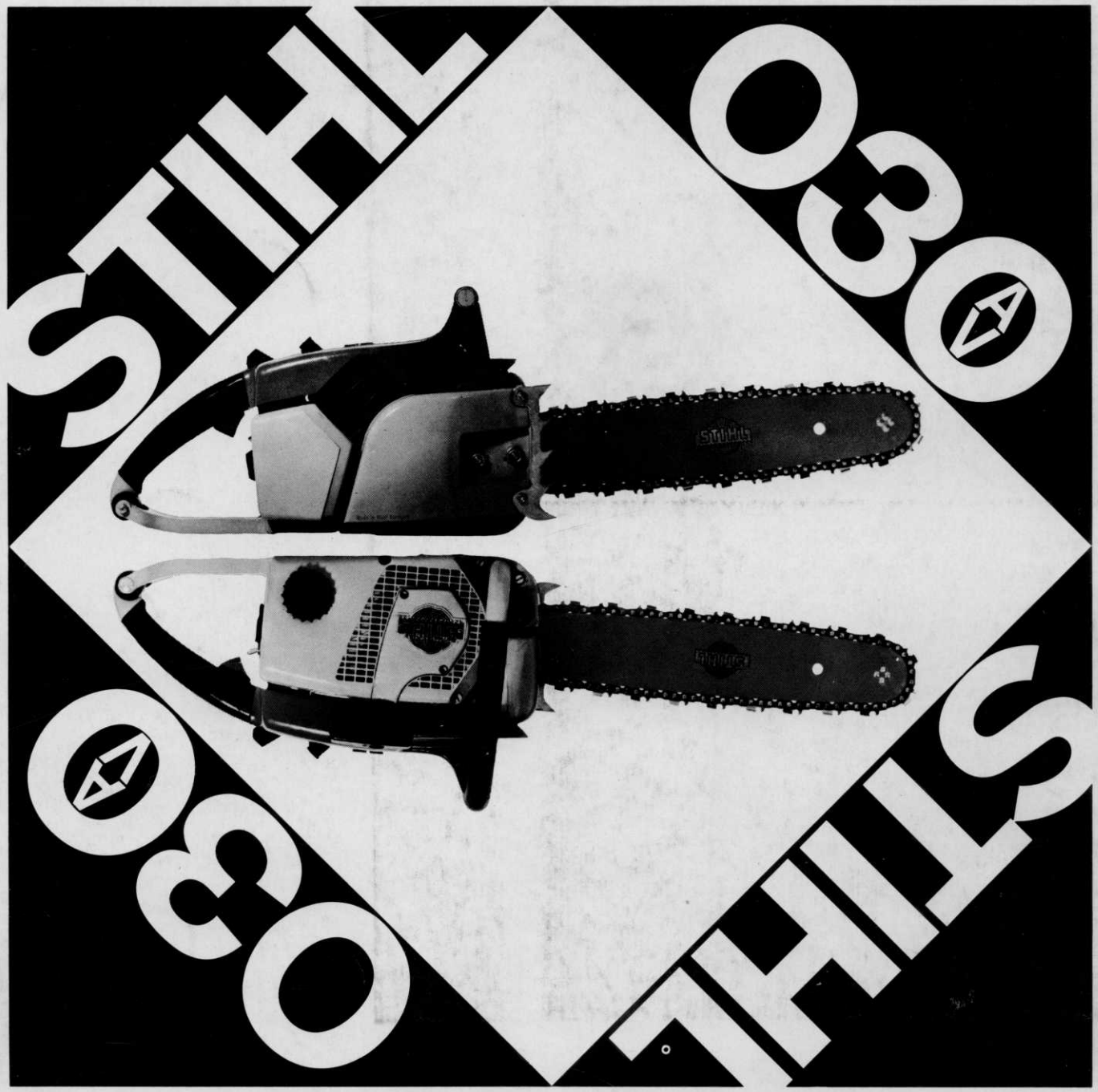

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